



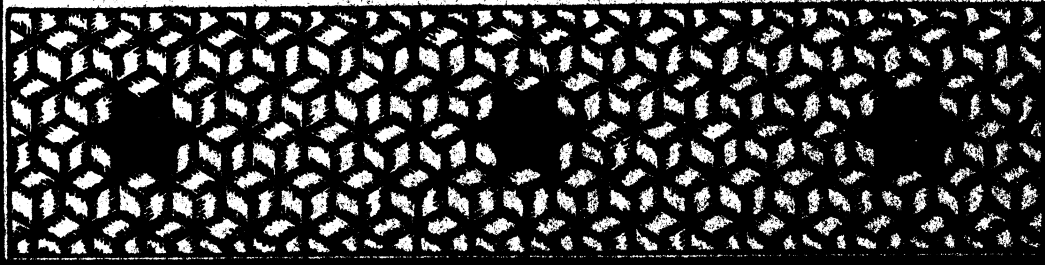
# THE PHILIPPINE CRAFTSMAN

OCTOBER, 1916

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Vol. V

No. 4





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# The Philippine Craftsman

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MANILA, OCTOBER, 1916

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When tillage begins, other arts follow.  
The farmers, therefore, are the founders of  
human civilization.

*Daniel Webster.*

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## AGRICULTURAL ACTIVITIES OF THE BUREAU OF EDUCATION.

By NORTH H. FOREMAN.

The problems of education are beyond doubt more varied when applied to agricultural teaching than when applied to any other industrial instruction. In the Philippines this work has been centered around a number of activities which are as practical as it is possible to make them. The various phases of the agricultural program of the Bureau of Education may be grouped under the following headings: (1) farming, (2) gardening, (3) food campaigns, (4) tree planting, (5) animal husbandry, (6) special projects, (7) extension work, (8) public-welfare work, (9) publications, (10) coöperation, (11) supervision, and (12) notable achievements.

### FARMING.

The Bureau of Education has a number of schools where all the activities of a well-regulated farm in the Philippines are carried on with special emphasis paid to training the boys and girls for successful farm life. There are 77 of these schools which are classified according to aims and kind of work followed, as agricultural schools, farm schools, and settlement farm schools. In addition to the schools which are readily classified there is the Central Luzon Agricultural School which has many special features owing to its position as the Insular school where the graduates of other schools may receive special vocational training in agriculture.

*Agricultural schools.*—An agricultural school is defined as one which emphasizes agricultural instruction by cultivating an extensive farm throughout the year, and which furnishes its pupils with subsistence and dormitory accommodations, wholly or in part at Government expense. At present, all of these schools are located in sparsely populated regions, and in several instances are the centers of agricultural colonies formed by homesteaders taking up public lands. Recent reports show that more than 1,000 homesteads have been taken near the Central Luzon Agricultural School.

There are six of these schools which last year enrolled 388 boys and 55 girls. These pupils cultivated 258 hectares, and secured a crop production valued at ₱10,892, in spite of extensive losses due to locust depredations and unusually destructive storms. These schools are located at Muñoz, Nueva Ecija; Mailag, Bukidnon; Bunuan, Agusan; Aborlan, Palawan; Kudurangan, Cotabato; and Lumbatan, Lanao.

*Farm schools.*—The Philippine public school system aims to complete the education of the ordinary citizen by three-year vocational courses after graduation from the four-year primary course. One of the vocational courses is offered in farming and another is offered in housekeeping and household arts. Both of these are given in the farm schools. A farm school is defined



The boys do the work. Planting scene at the Indang Farm School.

as a provincial school emphasizing intensive farming which provides neither subsistence nor dormitory facilities, and offers the course in farming for boys and the course in housekeeping and household arts for girls. The center units of these schools are the model 12 to 16 hectare farms from which it is expected to turn out efficient farmers and farmers' wives.

There are 10 of these schools which last year enrolled 1,089 boys and 35 girls, cultivated 53 hectares, and secured a crop production valued at ₱7,384, or ₱140 per hectare, notwithstanding the complete loss of crops at two schools owing to unusually severe storms. These schools are located at Batac, Ilocos Norte; Batangas, Batangas; Guinobatan, Albay; Indang, Cavite; Iba, Zambales; Cabayan, Isabela; Odiongan, Romblon; San Carlos, Pangasinan; Santa Maria, Ilocos Sur; and Tacloban, Leyte.

*Settlement farm schools.*—A settlement farm school is defined as a non-subsistence primary school established in a sparsely settled region, as the nucleus of a permanent settlement, the farm work being handled throughout the year on the communal plan. The crops from the 4 to 16 hectare farms not only are consumed by the pupils but often are the principal food supply of the family. The raising of fruits, hogs and chickens, and the use of work animals are very important parts of the instruction.

One of the objects of the agricultural system is to induce the mountain people to give up their roving habits and "caingin" exploitation and to form rural communities in the valleys near their present habitats. This desire caused the development of



A watermelon for every pupil. This helps to explain why the settlement farm schools are popular in Bukidnon.

the settlement farm school. These schools serve people who are non-Christian, many of whom are practically without civilized customs, and who subsist upon game, wild roots, and such agricultural crops as may be secured from scratching newly-cleared forest lands, and planting a few seeds. The use of animals on their farms is unknown.

There are 65 of these schools which last year enrolled 2,321 boys and 1,138 girls, cultivated 175 hectares, and secured a crop production valued at ₱17,697—₱100 per hectare. These schools are scattered over the most remote sections of 10 provinces, as follows: seventeen in Agusan for Manobos; 2 in Albay for Negritos; 22 in Bukidnon for Bukidnons; 7 in Davao for Mandayans; 3 in Lanao for Moros; 5 in Nueva Vizcaya for Ilongots and Igorots; 2 in Rizal for Remontados; 2 in Samar, 2 in Tarlac and one in Zambales, for Negritos.

## GARDENING.

Gardening was the first industrial course given in the public schools of the Islands. It is still the industrial work taken by most pupils, and it is the foundation of all other agricultural work. A vegetable garden and yard improvements are required of all primary schools and of intermediate schools having a sixth grade, which are not giving a special vocational course. Orchards and plant nurseries are required of all intermediate schools and are features of the work given at many primary schools. Seed selection and the improvement of native vegetables, and plant distribution are required. Special attention is given the teaching of the use of vegetables, the distributing of



Beginning to improve range cattle. The registered Nellore bull and the range herd of the Mailag Agricultural School.

tried-out recipes and the securing of the greatest production by keeping the land producing every month of the year. The most important feature, however, is the gardens which are maintained at the homes of the pupils as a regular part of the school work, and which are under the supervision of teachers.

Gardening is a requirement of the course of study for each primary grade, and for at least one intermediate grade in all except certain special vocational courses. Recitation periods of sixty minutes in primary grades and eighty minutes in intermediate grades, are devoted to classroom work and field practice. A big feature of the garden work at each school is the garden day exhibit. Last year there were 2,042 garden days at which 35,725 pupils and 14,321 farmers exhibited products. Figures for the past school year show that 64,117 boys and 2,000 girls

were taught vegetable gardening by means of the cultivation of 2,324 school gardens and 48,432 home gardens containing a cultivated area of 926 hectares.

#### FOOD CAMPAIGNS.

A great deal of attention is given the furthering of the production and use of certain food plants. This work has for five years taken the form of special campaigns for corn, legumes, sweet potatoes, and yams, the object being to get the farmers to grow more of the food consumed in the home. Remarkable results have been secured, and each year there are fewer demands for Government food distribution owing to the loss of the principal crops in a section of the country. All intermediate



Dairy cattle at the Central Luzon Agricultural School.

schools are required to grow and improve by selection and cultivation all special campaign crops.

The largest and most important campaign has been the one for corn begun in 1912 and continued up to the present. During this period remarkable increases in hectarage, average yield, and total production were secured. An important feature was the popularizing of corn as a human food. Available figures show that there has been an increase of 46 per cent in the cultivated area (443,848 hectares), 258 per cent in production (8,908,353 cavans), and 90 per cent in average yield (15.59 cavans per hectare).

The yam campaign begun 3 years ago has resulted in large increases in the production of tugue and ubi, the two yams receiving the most attention. One of the Bukidnon schools reported a production of 10,000 kilos from 2,000 square meters, or at the rate of 50,000 kilos per hectare (25 tons per acre).

Sweet-potato campaigns have been conducted for four years in Romblon, Mountain Province, and other sections where the sweet potato is one of the principal foods of the people. This crop has also received attention everywhere as one of the quick growing food crops. Emphasis has been given to the development of desirable varieties and their distribution. Legumes as well as sweet potatoes were advocated as secondary crops.

#### TREE PLANTING.

Tree planting has been one of the features of school work since 1906 when arbor day was first instituted by the Director



It pays to breed to a good boar. This pupil of the Central Luzon Agricultural School knows why the two hogs on the left are larger than their mother on the right.

of Education. The importance of this day will increase as Governor-General Francis Burton Harrison has issued an Insular arbor day proclamation for this year. The planting of shade, fruit and other trees of economic value receives attention throughout the year. The growing of ornamental plants and tree seedlings, and the teaching of simple vegetative propagation in a nursery is required of all intermediate schools. Many primary schools also have tree nurseries. An extensive coffee nursery is a feature of the Lumbatan Agricultural School; and a forest tree nursery is maintained at the Central Luzon Agricultural School. More than 50,000 coffee seedlings have been distributed from the Lumbatan nursery. There are 602 school

nurseries from which ornamental shrubs, shade trees, and forest trees to the number of 104,804 and fruit trees to the number of 83,780 were distributed last year.

The planting of trees which directly influence the food supply of the people has been emphasized for years as home work for which the pupils receive school credit. Mango campaigns, during which 20,000 mango trees were planted, were features of the school work in Mindanao and Iloilo last year. The schools of every province have adopted two or three fruits for first emphasis and are actively carrying out a campaign for more and better fruit. All farm and agricultural schools develop orchards as farm features. Extensive plantings of bananas, papayas, and pineapples are made at settlement farm schools.

#### ANIMAL HUSBANDRY.

The various features of animal husbandry have for several years been steadily introduced as an activity of the schools until now there are improved range cattle, dairy cattle, hogs and chickens, at a number of places. All schools doing extensive field work in agriculture are provided with work animals. The proper care and use of these animals are taught by actual field practice. At many settlement farm schools the people of the locality for the first time see animals used in farm work.

Poultry raising has been limited to the production of the Cantonese breed. A number of schools have home poultry projects. Twenty-four now have flocks which aggregate 1,912 fowls, exclusive of the 70 or more home poultry projects of pupils. Hog projects with pure-bred Berkshire boars have been established at 22 schools doing special work in agriculture. These now own 370 hogs besides those on the 10 home projects.

Every phase of cattle raising is receiving some attention. Range cattle run with well-bred Nellore bulls at Mailag and Muñoz. At the latter place there is also a small dairy herd. Two schools have range cattle; 2, registered bulls; 60 have work bullocks, and 30 have carabaos. In aggregate numbers there are now at the school 108 carabaos, 105 work cattle, 25 range cattle, 10 dairy cattle, and 2 Nellore bulls.

#### SPECIAL PROJECTS.

A sericulture project has been conducted at the Batac Farm School for a number of years. All processes in the production of silk are performed by pupils under the guidance of a teacher trained by the silk experts of the Bureau of Science. A fair grade of raw silk is produced, but apparently a great many

difficulties other than those pertaining to the actual production of raw silk will have to be overcome before sericulture will be a profitable industry in the Philippines.

When schools were established among the Moros on the islands of the Sulu group, the question of suitable industrial training offered new problems. The islands inhabited by these people who have for centuries been sea rovers, provided no facilities for the cultivation of crops. The main product is sea life, and sea gardening was introduced in the schools. Training in the



What the boys raise is good to eat. The girls do their part in the food campaigns, and at thousands of public demonstrations explain how palatable and nutritious foods can be prepared.

preparation of trepang, sponges, and shells for the market is given the pupils. The schools have sea gardens in which attention is given the culture of marketable sea life, especially certain kinds of sponges.

The putting into operation of a plan whereby the boys and girls may engage in home activities of an agricultural nature for which they get full credit as required school work has been accomplished in the formation of boys' and girls' agricultural clubs. A home project in either gardening, fruit growing, corn growing, poultry raising, or pig raising, may be selected by the pupil. This gives an opportunity to make the required work fit in with home surroundings.

## EXTENSION WORK.

The problem of taking to the homes the instruction given in the schools has been carefully considered, and a great deal has been accomplished, but the value of bringing the people to the school farms has not been underestimated. Supervised home projects as required work for boys have been found the best means of extending instruction to the homes. It is felt that the success of the work must necessarily be judged by the way the ideas become a part of the life of the people. It must be remembered, however, that the main product is the boys and girls who are able to recognize a fact, and who are willing to do the necessary hard work in order to secure desired results.



Are the people interested? This crowd attended a garden-day celebration at San Fernando, Union; 2,000 other schools held exhibits that were equally as well attended.

Home gardening is probably the greatest factor in reaching the people. In addition to the 48,000 home gardens of the pupils, must be considered the home projects in corn growing, in legume growing, and in raising other farm crops. Fruit growing as home extension work has been emphasized. School credit is given for fruit trees planted and cared for by pupils. Selected varieties of bananas, papayas, and pineapples have been widely distributed. The extension work in animal husbandry consists in the placing of public breeding animals at the schools, the distribution by exchange of improved breeding stock, and the promotion of home projects for which school credit is given. Figures for the past year show that teachers supervised 48,432

garden projects at the homes of the pupils, 20,000 farm-crop projects, 800 fruit-tree projects, and 50 animal projects. A persistent campaign was carried on to promote the proper use of all farm products as human food.

The farmers in the locality of the school farms have always been supplied with seeds and plants free of charge. Thousands of young tomatoes, eggplants and cabbages are annually distributed from the seed beds at school. It is a definite requirement that every intermediate school maintain plots of sweet potatoes, and legumes, and a nursery for securing selected seeds and plants for distribution.

#### PUBLIC-WELFARE WORK.

Every school is required to improve the grounds. Each pupil shares in this responsibility. Encouragement is given the making of yard improvements at home. School credit will be given for this kind of home work during the present year. The well-kept plazas, shaded streets and roads, and the few homes with yard improvements are the direct results of school influence, as these features did not exist in any town when the public schools took up the improvement of the plazas and planted the first shade trees. Recent reports show that there are 1,468 improved school grounds, 930 of which have lawns and 380 of which are enclosed with permanent fences.

Clean-up week is annually observed by the public schools during the last week previous to the Christmas vacation. The schools have taken an active part in promoting the agricultural fairs held in various sections of the Islands. The largest of these fairs is The Manly Agricultural Cup Contest which is an annual event for the Bicol provinces. Each year a larger number of the 2,042 garden days become real fairs. These fairs are important because of the excellent opportunity they offer for reaching the people with public-welfare propaganda. The civico-educational lectures, many of which are on agricultural topics, are one of the means employed to reach the people with agricultural facts. Many people attend these lectures. It is reported that 373,185 people attended the corn lectures during the 1914 corn campaign.

#### PUBLICATIONS.

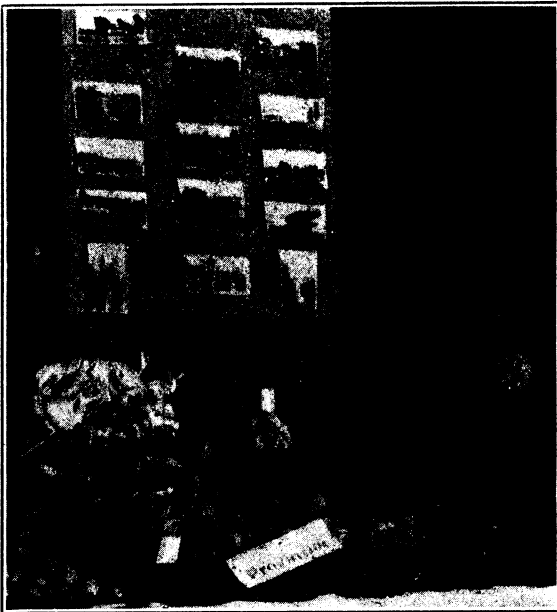
The classroom work and instructions for the agricultural activities are outlined in a number of publications, circulars and general instructions among which are the following:

"Practical Lessons in Tropical Agriculture," a 3 volume text,

published by the World Book Company, New York, which is used in the course in farming.

Bulletins of the Bureau of Education, Manila, No. 31, "School and Home Gardening;" No. 45, "Arbor Day and School Holidays;" "Agricultural Clubs for Filipino Boys and Girls;" the 20 follow-ups of the corn campaign; the 30 follow-ups planned for the agricultural clubs; the various issues of *THE PHILIPPINE CRAFTSMAN*; and the series of normal institute lessons.

Bulletins of the Bureau of Agriculture, Manila: No. 32, "Plant Propagation in the Tropics;" No. 27, "Citrus Culture in



One boy's garden-day exhibit. Bayombong, Nueva Vizcaya.

the Philippines;" and the various issues of the *Agricultural Review* and of the *Philippine Farmer*.

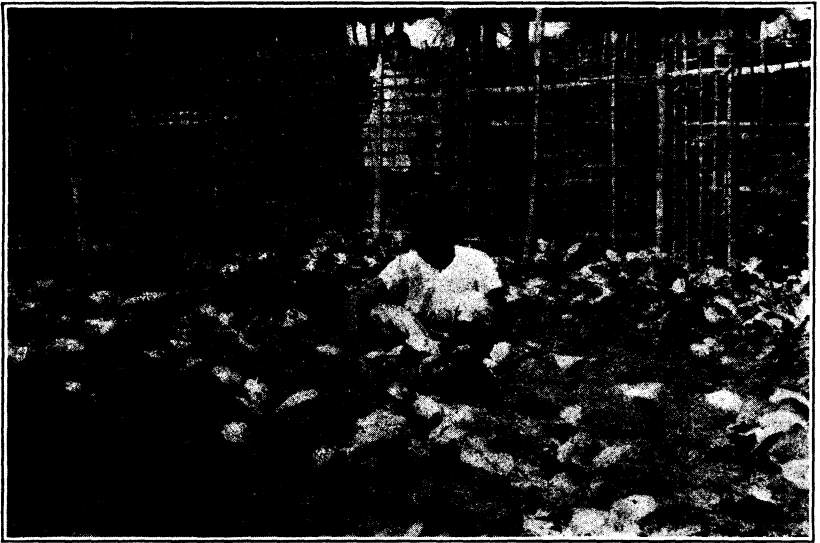
Bulletins of the United States Departments of Agriculture and Education, and of the various state agricultural colleges.

#### COÖPERATION.

The Bureau has endeavored to maintain helpful coöperation with other Government agencies and with the people. The Executive Bureau has coöperated closely. The Bureau of Agriculture has been more helpful than ever before. The work with the Bureau of Forestry through school nurseries and with the Bureau of Public Works in its construction of buildings and the

shading of the public highways, are examples of how the school work is made to correlate with the plans of all Government agencies.

As a whole an excellent spirit of coöperation has existed with all local officials, and the municipal councils have been willing to give agricultural education all possible financial support. In quite a few instances, however, provincial farm schools have not received the financial support from the provincial boards necessary for the development of successful school farms. There have been few instances of failure on the part of the people to support the agricultural work of the schools. The land is given



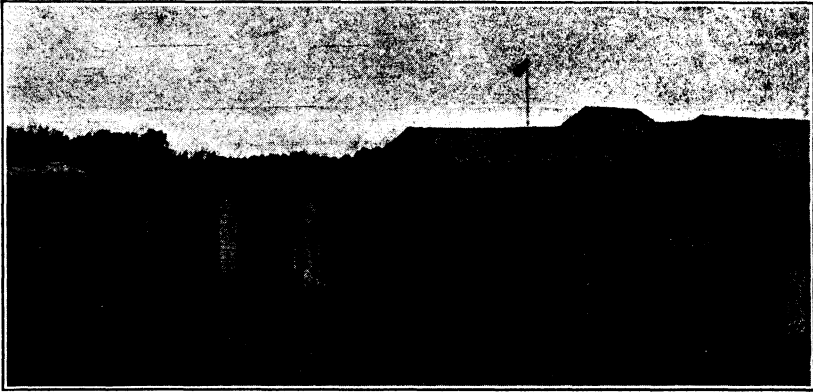
A home garden. A wholesome and profitable way to interest the boy in home activities.

free, work animals are loaned, and even buildings are constructed free of charge.

#### SUPERVISION.

The school agricultural work is under the direct control of the Assistant Director of Education and is in charge of an inspector attached to the General Office, who devotes his entire time to the supervision of the agricultural activities. Special teachers are employed in agricultural and farm schools. The work in gardening is handled mainly by teachers of the regular teaching force and is under the supervision of the division industrial supervisors. Special teachers of gardening are, however, employed to advantage in the larger schools.

Likewise a corps of well-trained teachers is necessary. Definite plans provide for giving teachers the particular training they need. The graduates of the College of Agriculture are employed in the farm schools, and the graduates of the Central Luzon Agricultural School are widely employed in settlement farm schools. Both teachers and pupils are pensioned for one and two years' work at the Central Luzon Agricultural School which institution provides high-school vocational courses in agriculture for teachers. Two years of instruction in gardening are also given all male students in the Philippine Normal School. Definite courses in agriculture and gardening as taught in the various types of schools, are given in the Manila Vacation Assembly to teachers who are sent in from the provinces to receive



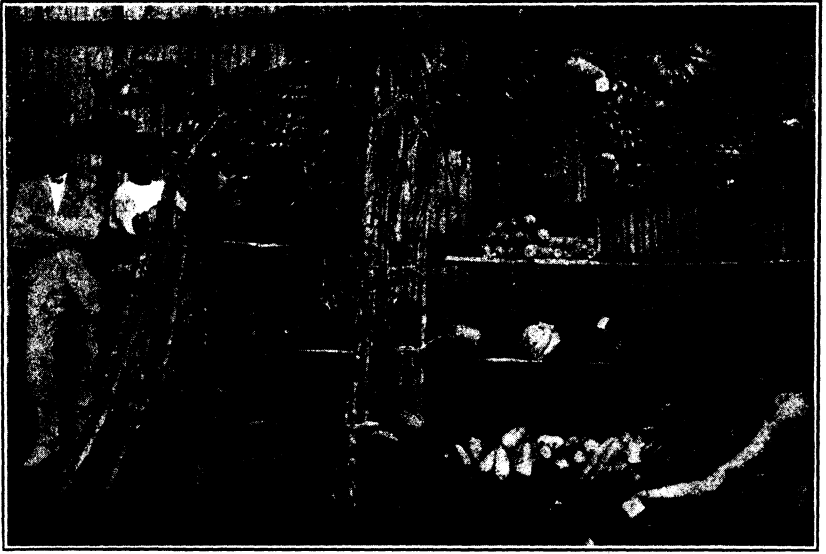
Adequate ground improvements are possible on such sites. The provincial high school grounds, Lucena, Tayabas.

training as institute instructors in these subjects. They, in turn, teach these particular courses in the various provincial normal institutes in June to all those who teach gardening in the public schools.

#### NOTABLE ACHIEVEMENTS.

Melchor Roldan, a schoolboy of Narvacan, Ilocos Sur, was awarded a gold medal by the jury of awards of the Panama-Pacific International Exposition as the champion corn grower of the Philippines. Melchor grew corn at the rate of 150 bushels per acre and has been elected vice-president for the Philippines in the National Top-Notch Corn Growers' Association.

The Bureau of Education displayed the first vegetable exhibit ever shown in Manila, and maintained creditable vegetable and farm product exhibits at all Philippine Expositions. The display



This is how two boys in Misamis contributed to the success of garden day.

at the Panama-Pacific International Exposition awakened much interest. One medal of honor, seven gold medals, and two silver medals were brought to the Philippines by this feature, which occupied a small part of the display space used by the Bureau.

The 77 school farms, the 2,324 school gardens, the 48,432 home gardens, and the 20,000 animal and farm crop projects are, and



One of the best school gardens in the Philippines—the provincial school garden, Bayombong, Nueva Vizcaya.

will continue to be, a great influence for good upon the moral, social, and physical condition of the people. Instruction was given to 67,815 boys and 2,552 girls who had actual field practice in vegetable growing. These school children placed under cultivation 1,300 hectares, the larger part of which would otherwise have remained uncultivated. This land lies in some 70,000 small parcels scattered throughout the Philippines. These figures have a greater significance when it is understood that a teacher pays a weekly visit to each of these home projects, and discusses the garden work and general agricultural facts, with the boy and the family.

The following compilation from data for the past few years indicates the steady growth of the various features:

	1913-14	1914-15	1915-16
School gardens .....	3,236	3,280	3,545
Home gardens .....	41,642	45,689	48,432
Agricultural schools .....	4	4	6
Farm schools .....	8	8	10
Settlement farm schools .....	48	47	61
Garden days .....	300	1,423	2,324

CULTIVATED AREA.

	Hectares.	Hectares.	Hectares.
Agricultural schools .....	131	226	258
Farm schools .....	21	53	55
Settlement farm schools .....	68	112	189
School gardens .....	531	541	526

ENROLLMENT.

	1913-14		1914-15		1915-16	
	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
Agricultural schools .....	257	30	388	46	558	55
Farm schools .....	450	183	927	217	1,117	365
Settlement farm schools .....	1,717	856	1,610	838	3,302	1,141
Gardening .....	57,234	1,835	52,164	1,867	64,117	2,000
Home projects .....	43,561	50	43,759	100	53,932	148

In every phase of the work the schools aim to be practical to the highest degree, and to make the boys and girls efficient in their vocations.

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## RESULTS OF AGRICULTURAL EDUCATION AS SHOWN IN GRADUATES OF THE CENTRAL LUZON AGRICULTURAL SCHOOL.

By KILMER O. MOE.

Proof of the fact that practical agricultural training is the proper course of instruction for students who are fitting themselves for agricultural positions, has been clearly demonstrated by the graduates from the Central Luzon Agricultural School.

Some one has said that a man never accomplishes anything after he reaches maturity, unless because he did something when he was a boy. A boy who is continually pampered and allowed to be idle will likely be idle when he grows up. It is equally true that experience brings confidence and initiative and an attitude toward work which is essential to success. In adopting the various industrial courses the Bureau of Education is endeavoring to furnish the training necessary to fit individuals for service, and to give them the proper attitude toward the every-day problems of life.

A great many students fail to succeed after leaving school because of a wrong attitude toward their duties. They have studied with a view to getting out of work, rather than with the idea of getting into it properly. Ordinary duties become drudgery to them, the tasks which should be undertaken with a feeling of responsibility, are too often slighted or passed by unnoticed. This attitude is due chiefly to wrong training. From childhood these students may have been permitted to slight their daily tasks and to follow the line of least resistance in the performance of duties.

One great benefit derived from the course of instruction given at the Central Luzon Agricultural School is the discipline of required work, not only in classroom tasks but in outside duties as well. A student who does not realize that his daily tasks must be performed, or who tries to shift them to his companions, soon gets into bad repute with the students and teachers and will have to mend his ways or leave the community. If he is worth anything at all, pride will come to his assistance until he has undergone a course of discipline, after which he fills his place as a student citizen without further pressure from outside sources. That such training fits him for the duties which are sure to confront him later in life is shown by every student who has graduated from the school. This is well ex-

pressed by one of these graduates who found himself under a teacher who had received only academic training. To quote from his letter:

"The aim of this school is to grow fruit trees such as orange, lemon, langca, papaya, mango, chico and santol. We have a vaca, a plow, and several hoes and shovels and rakes, but we have no harrow. I have just sent my requisition for the necessary tools. Now I am building roads, preparing drainage, and making lawns. I contracted to put walls under our schoolhouse, using the pupils as laborers; now it is finished at an expense of ₱4.75. The colony furnished me tools and boards. A laborer wished to contract this work for ₱40. The superintendent was about to agree, but I told him that I could do the work, using the boys as my laborers. It took only two weeks to finish the work.

"There are two of us teachers in the school. My principal is a graduate from the Manila High School. He has had no experience in planting trees and making school-ground improvements."

One of the greatest advantages a person can have over his competitors is the fact that he has had experience, while the other has not. The knowledge and confidence gained by coping successfully with difficult situations is an advantage which is not to be taken lightly in the struggles of later years. Because of the fact that students at the agricultural school are required to construct quarters, to clear land, lay out and construct irrigation canals, plant and harvest crops and improve and maintain school grounds, they are especially qualified to undertake similar activities after they graduate.

For the past two years the Department of Mindanao and Sulu has offered positions to almost the entire student body. The plan of using the graduates from the Central Luzon Agricultural School for this work has met with exceptional success, due chiefly to the fact that the training which these young men have received eminently fits them for the work which they have to do. Reporting on the services of the first three to secure positions in the department, their superintendent expressed himself as follows: "I wish that all the teachers in the province were of this type. Nothing would then seem impossible."

In a requisition for more of these graduates the Superintendent of Mindanao and Sulu has this to say:

"Your big, energetic graduates who are not afraid to tackle a difficult job away back in the interior of the Moro and pagan country are just what we need. The combination of theory

and practice which you give them at the Muñoz school develops a very satisfactory teacher for remote places where supervision necessarily is reduced to the minimum."

A great many of these graduates have received isolated stations far away from any organized community. They have had to build from the ground up. With no knowledge of the language or customs of the people with whom they were placed, they have had to clear the land for a site on which to erect buildings and later have had to supervise their construction. To accomplish any results whatever, it was necessary to gain the good will of the ruling dato and to work through him. This was not always an easy task.

The following is quoted from the letter of a student who recently secured a position with the department:

"I am 50 kilometers from the capital of this province and far away from an organized municipality. It is one of the most desolate and dangerous places in this department. At present I am utilizing the experience I gained at the Central Luzon Agricultural School and it fits all right, especially as the soil is very fertile and the conditions are very favorable for the production of food crops."

To date about 150 graduates out of a possible 200 who have had the special work, have been given positions or are farming for themselves. At least 20 of the others have taken up higher courses at the College of Agriculture, while a dozen or so are being held for service in the Mountain Province at the request of the Department of the Interior. A large majority of the graduates who have secured positions are rendering good service, and are a credit to the institution.

While this excellent showing is due chiefly to the practical nature of the training given, it is to some extent due to the sifting process which is constantly taking place from the first day of the school year. Only the strong and ambitious survive. The weak and the worthless fall out before many months are over. Long before Christmas the rolls are cleared of undesirables, and the remaining ones make the best of their opportunities.

Conducive to better results is the system under which no certificates are granted until at least a year of satisfactory service has been rendered. Reports on student graduates are furnished by employers at the request of the superintendent of the school. If these are satisfactory, certificates are granted to take the place of the provisional certificates previously held.

Students from the school are sent to all parts of the Philip-

piners. They serve as teachers, agricultural inspectors, foremen, and steam engineers. They have received special training to enable them to carry on practical work in agriculture. The success that the graduates have had demonstrates the principle that agricultural practice is more important at the present stage of development than is highly technical training.

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"The father in the city spends, on the average, a larger percentage of his income for the welfare of his children than does the father on the farm. The farmer, relatively, raises everything else more carefully and, as a rule, more successfully, than his children."—Thomas D. Wood, M. D.

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With the consent of the Dutch authorities, several expert tile makers were recently brought from Java to Zamboanga. They have found the Mindanao clay very well adapted to their purposes, and it is now proposed to teach the potters of the Department the simple art of tile making. Brick clay being found in abundance in all parts of Mindanao and Sulu, it is hoped that in a few years the beautiful red tile roofs, such as are seen everywhere in Java, will have supplanted nipa entirely.

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#### THE EXAMPLE OF SCHOOL GARDENING IN CATANAUAN, TAYABAS.

The people generally are familiar with gardening, and they naturally take garden work as a standard by which to measure the efficiency of a school. A flourishing garden is to them the sign of success.

School gardens in this district furnish vegetables for the community. The people expectantly await the harvest. They come to the gardens to make their purchases. What they see encourages many to take up horticulture to meet the increasing demand for vegetables.

The first garden days held two years ago revealed the local limitations in variety, quantity and quality of vegetables produced. Since then there have been sporadic but serious attempts on the part of the people to remedy the deficiencies. That there is now a daily increasing supply of fresh vegetables is the gratifying result. (P. M.)

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## DEMONSTRATION WORK IN RICE CULTURE FOR FARM SCHOOLS.

By ELADIO SARLAN, Instructor in charge of Demonstration Work, Central Luzon Agricultural School.

The fact that the pupils attending a farm school are not ready to understand technical explanations of every day physical phenomena makes it difficult for the teacher to make classroom instruction interesting. In order to show the pupils how rice lives and produces a crop, and to demonstrate its behavior under various conditions and different treatments, no better method can be employed than that of requiring the pupils to plant and take care of individual plots.

All students learn largely through seeing. They might be able to recite perfectly on seed selection, preparation of seed beds, irrigation, fertilization, and thorough preparation of the fields, but they might not apply this knowledge in the actual practice of farming at their homes. Some may be sceptical, and they must be shown by successful demonstrations what thorough preparation of the fields will accomplish. Demonstration work should, therefore, be concrete and practical, and it should deal only with specific problems.

Let the students carry on their work in a systematic and orderly manner. Let them make and report their close observations on the life of rice, such as germination of seeds, proper time for irrigation, stooling of rice, control of water in the paddy, time of flowering, harvesting, stacking or curing, threshing, milling and storing. A plan for demonstration work in rice culture, which can easily be carried out at farm schools, is here given.

*The plots.*—The plots should be so located that they can be watered easily. They should be laid out in squares each containing one are, 100 square meters, inside measurement. The dikes inclosing these plots should be strongly built to prevent leaks. Each square is to be planted with rice under special conditions, to illustrate some definite truth regarding rice production. For the purpose of showing the effect of water or of fertilizer, there must be a check plot, one in which plants are grown under natural conditions for comparison with those raised under scientific treatment, the results to be compared after harvesting.

(a) *Comparative tests in the preparation of the seed bed for rice.*—The object is to show which method is best. There are two general ways of planting seed beds. The others are mere modifications of either one of these. "Bakal" designates the dry method; and "sabog," the wet method. In bakal as well as in sabog, late and early varieties of rice should be tried. Again, the seed beds may or may not be fertilized. If the bakal method is used the seed bed is worked thoroughly only when the soil is moist, so that the surface will be covered with soil particles resembling pea gravel of about one centimeter in diameter. Twenty to fifty seeds are drilled in holes two to three centi-



The suyod, or rice harrow, is the most convenient implement for puddling.

meters<sup>0</sup> deep. These are in rows ten centimeters apart each way. These plots are not irrigated, but they depend entirely on the rain.

The sabog method is to flood the plot with enough water so that when finished there will be water to be thrown out. Then it is plowed and harrowed with a suyod until it is puddled, leveled by means of a banana stem, and allowed to settle. In the meantime, the sack of seeds,  $\frac{1}{2}$  cavan to an are of seed bed, should be soaked in water for 36 hours. After this the contents should be poured out in a dry, cool place and kept covered with wet sacks for from 6 to 8 hours, at the end of which time the seeds are ready to be sown broadcast in the seed bed. If at the time of broadcasting there are heavy rains, the seeds should be

properly covered with mud. Otherwise, a bunch of bushes may be used lightly to cover the seeds. Germinating seeds need air, and seeds fail to germinate when covered with water. Seedlings of early varieties should be transplanted when they are from 30 to 35 days old, while seedlings of late varieties should be transplanted when from 40 to 45 days old. After 45 days the plants form nodes, and in this stage transplanting is likely to injure the plants to such an extent that they will fail to stool and head properly. It is better to plant young seedlings than old ones.

(b) *The preparation of fields.*—This exercise requires three plots planted with only one variety. They should differ in their



The whole class may take part in the preparation of seed beds.

preparation; thus, plot 1 is well prepared, thoroughly plowed and harrowed, clean and level, with good strong dikes. Plot 2 is poorly prepared, weeds being left through hasty plowing and harrowing. Plot 3 is carelessly prepared, with stumps of trees or nests of anay left on it. Care should be taken that the transplanting is done on all plots at the same time.

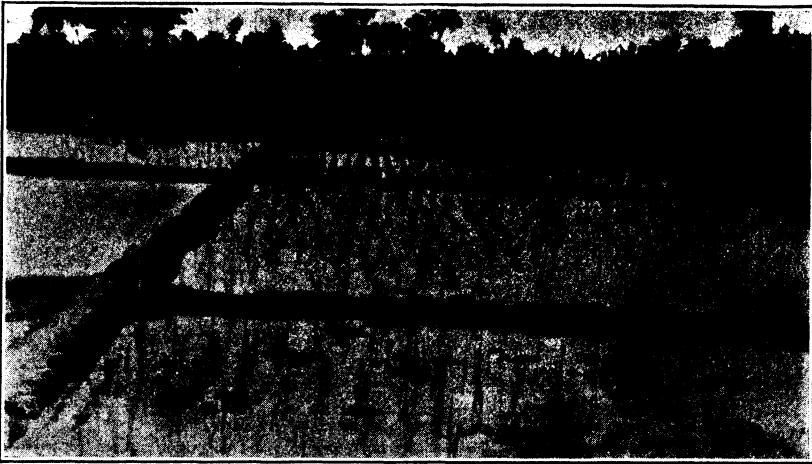
(c) *The distance between hills in transplanting.*—For this experiment four plots should be prepared and planted with one variety. The conditions should be the same except for a difference in the spaces between the hills. In plot one, the hills should be 10 centimeters apart each way; in plot two, 20 centimeters; in plot three, 30 centimeters; in plot four, 40 centimeters.

(d) *Irrigation.*—To show the effect of water on rice, several

plots should be prepared in two rows. Both rows should be transplanted to early and late varieties, grown side by side. One row should have water every day, while the other should not be irrigated at all. Care should be taken to maintain a broad dike, strong and compact, between the two rows.

(e) *Fertilizers*.—The fertilizers to be used should be the commonest, cheapest, and most abundant. There should be at least seven plots prepared in the same way from one seed bed, but each receiving a different treatment. They may be arranged as follows:

1. No fertilizer.
2. Stable manure, 20 cubic meters per hectare.



These 2 rows of rice plots, each containing 54 squares, 10 by 10 meters in area, show the extent to which experimental work in rice culture is being carried on.

3. Ashes, 10 cubic meters per hectare.
4. Green manure at the rate of 40 tons per hectare.
5. Canal mud, heavy application.
6. Composts, 6 tons per hectare.
7. Stable manure and ashes, 20 cubic meters per hectare.

(f) *Variety tests*.—There should be as many plots as there are varieties of rice to be planted. In the matter of preparation and irrigation, the plots should be treated exactly alike. There must be careful observation of the life of the plant. The time of flowering and maturity, susceptibility to fungus disease and insect pest, production of suckers or stools, and yield, should all be the subject of accurately made notes. There should be pure-bred seeds, seeds not selected, early and late varieties, and bearded and non-bearded varieties.

(g) *The season for planting.*—At least three plots should be devoted to this exercise. The first one should be early planting, July 7; the second should be medium planting, August 7; the third should be late planting September 7. The dates given apply at the Central Luzon Agricultural School. The plots should be planted with one variety, but from different seed beds.

(h) *The kinds of soil.*—If in the vicinity of the school there are available places where different kinds of soil exist, they may be planted with one variety of rice. Both plots ought to have about the same water supply. The yield per are should be determined. The class might also visit distant fields to observe the effect of different soils.

(i) *Different methods of planting rice.*—(1) American; the seeds are drilled in by machines, but where these are not to be



Each square represents a problem of its own.

had, the work can be imitated by hand, in a well-prepared plot. When the seedlings develop two leaves, the plot should be irrigated. This should continue at frequent intervals until flowering time. (2) Italian; the seeds are sown broadcast on a plot the surface of which has been pulverized and lightly covered with soil. (3) Chinese; the seeds are first planted in a seed bed, bakal or sabog, and afterwards they are transplanted into a puddled field. There should be only one variety for all of these plots.

The conditions under which plants are to be grown must be carefully determined from the beginning, and strictly maintained to the end. The object is not to get a harvest, but to show how rice responds to different treatments,—irrigation, thorough preparation, and fertilization. It is necessary to have a suyo or rice harrow with which thoroughly to prepare the rice land. The best time to carry out this demonstration plan in a given

locality, is during the rice-growing season, so that when the seedlings are ready to be transplanted a sufficient supply of water will be assured. At the Central Luzon Agricultural School seed beds are prepared from May to June, and transplanting takes place between July 5 and August 25. Conditions being normal, the maximum crop can be harvested only at its proper season. At harvest time attention should be given to the selection of seed from all of the plots. The seeds kept should be carefully stored in strong sacks with good labels.



It is a good plan to have two boys responsible for a single square.

Each of the plots should have a signboard, on which should be painted the number of the plot, variety of the rice, treatment of the plot, and the date of transplanting. The most convenient size for the board is 15 by 60 centimeters.

An irrigation ditch should be built along the side of the rows of plots, so that each of them can be easily watered. The dikes should be 1 meter wide and 50 centimeters high. The fertilized plots should be so arranged that in irrigating, the water will not pass from the fertilized to the unfertilized plots. The rice-growing period at any given place may be different from that in another. The season should be carefully followed in each locality, in order to solve practical field problems in rice culture.

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## HOW SPECIALIZATION IN GARDENING PAYS.

By ARTHUR G. SPILLER,<sup>1</sup> Principal, High School, Capiz.

In the Province of Tarlac, school authorities are giving special attention to gardening because the province is preëminently agricultural and because there is a relative dearth of materials suitable for other industrial work for boys. The work has been notably successful and has developed to a degree that makes it a subject well worthy of consideration.

The emphasis upon gardening began in the municipalities of Gerona and Paniqui, about 1913, under the late Mr. Allen A. Helms, who was then supervising the Gerona District. Mr. Helms had just come from the Central Luzon Agricultural School at Muñoz, where he had given a successful demonstration of practical farming. He believed that school gardening could be and should be successfully carried on at every school in Tarlac Province. During the following two or three years, he established and developed practical school and home gardening at every school in his district. In doing this work, Mr. Helms followed out carefully the rules and fulfilled the requirements of the Bureau of Education. Noticing this practical and successful work in gardening, the school authorities began to give the subject more attention and other schools began to do more and better gardening.

During the school year 1915-16, the following municipalities may be said to have specialized in school gardening: Gerona, Paniqui, Camiling, Santa Ignacia, San Clemente, and Pura. In these towns, the gardening was kept going at practically every school throughout the entire year. Only a few barrio schools stopped the work at vacation time. Certain other schools also did especially good work in gardening. Among these were the central schools at Moncada, San Manuel, and Anao. This specialized gardening, if it may be so called, is spreading rapidly over the province. It is believed that very soon every school in the province, large and small, will be doing decidedly good work in gardening. The rapid increase in the work may be seen from a comparison of the total values of the output of the school gardens of the province for the past two school years. For 1914-15 the total value was ₱1,801.75. For 1915-16, it was ₱6,013.33, an increase of ₱4,211.68, or over 233 per cent in one year. Such progress is remarkable.

In the schools where gardening has been emphasized, no

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<sup>1</sup> Formerly supervising teacher in Tarlac.

special means have been employed and no new system has been introduced. The specializing has been neither more nor less than a careful carrying out of the Bureau of Education rules and suggestions regarding school and home gardening. Superintendents and industrial supervisors have laid special emphasis upon the matter of gardening and the supervising teachers and municipal teachers have taken pains to carry out the gardening plans. The results speak for themselves.

Some of the things which have been emphasized are: (1) Seed selection, (2) proper cultivation, (3) crop rotation, (4) proper watering of gardens, and (5) the observance of garden day. For the purpose of this article, schools which have emphasized the five things named are considered to have specialized in gardening.

In every school where gardening has been emphasized careful attention has been given to the selection and preservation of seeds. Few seeds are now purchased by these schools. At the close of the school year, in each school one may find a nice assortment of good seeds stored for use during the next school year. The seeds are kept in bottles with charcoal in the manner prescribed by the Bureau of Education. The following is offered as an example of what can be done in the way of seed saving: At Paniqui, Tarlac, the assistant supervising teacher, Mr. Alfonso Cancio, has grown large luscious American tomatoes for seven years, selecting and preserving seed each year since the first. He now has a supply of seed ready for the eighth year's planting.

The cultivation of the garden also receives careful attention. In this, the suggestions made by the Bureau are followed, but it is noticeable that the schools which have the best gardens have reduced the paths to a minimum width. A large amount of cultivation is insisted upon. The best home gardens have few, if any, uncultivated paths. Experience has proved that deep cultivation at some distance from the plants greatly increases their growth.

The proper rotation of crops is another matter that has been emphasized. It has been proved that, for every month in the year and for almost any sort of season, there are food plants which will thrive and produce well, if properly cared for. For example, if the ground is well plowed before the planting is done, camotes and sincamas planted in March or early in April will produce a large and valuable crop during the ensuing vacation time, the hottest and driest part of the dry season. A large number of the barrio schools in the Paniqui district secure money in this way for athletic goods for the next school year.

The watering of the gardens has been quite a problem. Various plans have been tried. The best success has been attained where good wells were dug within the garden sites. A little irrigation system of bamboo pipes and small ditches carries the water to the part of the garden which needs it. The gardeners usually draw the water by means of a pulley, rope, and bucket. The object of the watering is two-fold: (1) to tide over any short, dry times during the vegetable growing season, and (2) to make possible the production of vegetables and leaf crops far into the regular dry season. At Gerona, where the schoolboys dug a good well during the past school year, a large garden of fine plants was kept growing in good condition from October until after the middle of April. The lettuce, pechay, beets, mustard, cabbage, peppers, and string beans were growing just as well in March and April as at any time during the preceding regular season.

The boys who have specialized in gardening have learned a great many things by practical experience. For example, if there are extra large tomato plants but no tomatoes, these boys will at once explain that it is because the tomatoes were watered too much after the plants were large; that tomatoes require comparatively little water after the plants are large. If cabbage does not head well and the worms are taking it, the boys will explain that cabbage should not be watered by putting water upon the plants; that cabbages require a considerable quantity of water, but that it should be brought to the plants by means of ditches which are at least a foot distant from the root stalks. There are numerous other things which the boys can tell with equal promptness and certainty.

Garden day is observed by the schools of each municipality in Tarlac. The suggestions sent out by the Bureau of Education are followed. Garden and agricultural exhibits are made the big features at each garden day celebration. The people donate the necessary bamboo. The schoolboys bring it to the town plaza and construct booths. All schools of the town compete in garden exhibits, each school using one booth. The variety, quantity and quality of fresh garden products exhibited by the schoolboys would be a great surprise to most people in the Philippines. The farmers of the town compete in agricultural exhibits, the farmers of each barrio using one booth. Interest in these exhibits is rapidly spreading among the farmers. As an example, in the barrio of Dicolor, Gerona, the teacher organized a barrio garden day in the observance of which about seventy farmers participated. They exhibited their products in indi-

vidual booths. The prize winner exhibited 50 different farm and garden products. Several others exhibited 38 or 40 different things. It is interesting to note that the winner had formerly been a barrio teacher and had once been a pupil at the Central Luzon Agricultural School.

During the school year 1915-16, the schools of six entire municipalities, with several additional schools, took part in the specialized gardening. There were about 84 schools and 100 teachers interested in the work. Some 1,489 pupils took part in it. The total area of land cultivated by them, based on the February reports, was 62,970 square meters. The total value of the product for the year was ₱5,327.76. It is interesting to note that in the schools which emphasized gardening, 67 per cent of the boys took this work; they cultivated 65 per cent of the area of all of the gardens, and they produced over 87 per cent of all of the output of the gardens.

Of the total harvest of garden products for the year, about seven eighths was used by the pupils and their families. About one eighth was sold for cash. All of the cash went either to the pupils or into the pupils' fund, only a small amount going to the latter. The total of the cash thus distributed in the province during the year was ₱761.80. About 95 per cent of it was earned in the schools specializing in gardening.

The total product was much greater where special attention was given to the gardening. The 233 per cent increase for the province in one year was undoubtedly due, in part, to the increased number of schools specializing. The product per 100 square meters, or per pupil, was also much larger in these schools. Among the municipalities specializing, the highest average per 100 square meters was ₱13.98 and the highest average per pupil was ₱7.04. Among the towns not specializing, the highest average per 100 square meters was ₱3.57 and the highest average per pupil was ₱1.15. The lowest averages among the towns specializing were ₱2.85 per 100 square meters and ₱1.28 per pupil. Among the towns not specializing the lowest averages were ₱0.53 per 100 square meters and ₱0.41 per pupil.

It may be that certain unfavorable results could accrue from such specialization in gardening. This might happen if the idea were carried too far or were to be overdone in any way. Nothing of the kind, however, is anticipated in Tarlac. It is believed that the industrial courses can be kept properly balanced. A very large place is given to gardening for boys because it is the proper and natural industrial work for a strictly agricultural province.

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## SUGGESTIONS FOR PRIMARY AND INTERMEDIATE GARDENING TEACHERS.

By W. K. BACHELDER, Instructor in Gardening, Philippine Normal School.

Gardening teachers should possess an absorbing interest in the subject, successful experience in growing vegetables and in caring for school grounds; also a thorough knowledge of the fundamental principles of agriculture and of teaching. This preparation may be secured through practical work in gardens and school grounds, observation of model training classes, practice teaching, and classroom instruction.

The model gardens for pupils in the grades are important because they tend to fix in the minds of students standards which they will afterwards try to maintain in their own schools. Working in these gardens and observing the methods in use impresses upon students the requirements of the Bureau of Education in the most convincing way possible. For practical work there must be an area containing space sufficient for each student to have a garden of his own. There must also be space for model primary and intermediate gardens to be cultivated by the pupils in the training classes.

The primary garden should, of course, be laid out in accordance with the requirements of the Bureau of Education as outlined in General Instructions No. 22, s. 1916, and in Bulletin No. 31 (revised). In addition there should be a few model home gardens, as it is impracticable in Manila for all pupils and students to maintain gardens at their own homes. Experience has shown that in the vegetable garden the most convenient width of the plot is one meter. The paths should be from 20 to 30 centimeters wide. The handwheel, hoe cultivator should be used for cultivating field crops unless animals are available. The use of this implement should be encouraged.

The students, teachers in training, should cultivate vegetables and field crops in plots not less than 100 square meters in size. All crops grown in the Islands should be raised by the students and utilized in so far as possible. Experience has shown that a considerable number of useful vegetables are quite unknown to some students and in certain localities. Vegetables worthy of introduction, such as roselle, endive, okra, basella rubra, native improved lima beans, Lyon beans, and Indian cucumber should be grown. The intermediate garden should contain plots of pineapples, papayas, legumes, yams, corn, and vegetables. There should be a seed house, a sanitary closet, and a compost heap.

The corn should be in one large field and the vegetables in another. The larger the fields the more the garden will suggest a small farm. Everything possible should be done to give the students the idea of cultivating a large area rather than small units.

One of the worst agricultural practices in the Philippines is the waste of vegetable matter. Never burn or throw away any vegetable matter except diseased plants and weeds bearing seeds. The compost heap is always useful, first as a convenient place to throw refuse vegetable matter, and later as a deposit from which may be obtained the best possible soil for seed boxes and potted plants.

A nursery is an important part of the garden and in it should be propagated several kinds of shrubs and trees for use and ornament. In this way the student will become familiar with their names and characteristics, with the propagation and planting of fruit and shade trees, and also with the more easily grown ornamental plants such as *acalypha tricolor*, *pisonia alba*, *duranta*, *odonstenema*, *grapto phyllum*, *bougainvillea*, *allamanda*, *violetas*, *panax*, palms, ferns, and Japan ivy.

Practical work and classroom instruction can be combined advantageously. At the opening of school in June, the garden should be green with a leguminous cover crop which should be turned under, thus affording an object lesson in green manuring. Further instruction can be given in the classroom after the rush of work in the garden is over. The work of spading and raking the garden offers an opportunity for teaching correct methods of preparing the ground for planting, a very important matter. The greater part of every school garden should be planted to legumes in June in order that they may get a good start for the rainy season. If local conditions warrant, corn may also be planted. Other crops suitable for the rainy season may be planted in smaller areas, and thus the student can learn how best to utilize the garden, and what vegetables to grow. In the same manner he can be taught what vegetables are most suitable for the remainder of the year. Emphasis should be placed on the fact that the garden must be planted with a cover crop, preferably Lyon beans or patani, early in February in order that it can get well started before the ground becomes too dry. If desired, corn may be planted with the legumes. After the harder work is finished, necessary classroom instruction may be given on these matters.

Work on school grounds is a necessary part of the training of a gardening teacher. Here he learns more about the char-

acteristics and the care of the ornamental plants which he has propagated in the nursery, and he also learns how to group them effectively. Training in the planting and care of school grounds should result eventually in beautiful public and private grounds throughout the Philippines.

The student should study the civico-educational lectures. Everything possible should be done to bring about a realization of the value of this means of reaching the people of the community. The reports required by the Bureau of Education are necessary and must be submitted promptly, neatly, and accurately. The student should realize this fact and should learn how to make them. Undoubtedly agricultural clubs can be used very effectively to further the interests of gardening and of agriculture. The student should become familiar with the organization of at least one such club.

During the school year the student enters into many activities which are properly a part of his training for teaching gardening. One of the most important of these is the proper celebration of arbor day. The student learns that the program of the day, in addition to the planting of trees and shrubs, should consist of athletics, a literary and musical program, and whenever possible, refreshments prepared by the domestic-science classes. The entertainment should be made both interesting and instructive. The best speaker obtainable should always be secured to talk on some subject related to the occasion. The student should become familiar with literature issued by the Bureau of Education bearing upon tree planting and arbor day. It is exceedingly important that he come to realize the necessity of conserving and also of planting forests in the Philippines.

Although practical work is of most importance, nevertheless attention should be given to classroom work. The texts prescribed by the Bureau of Education and also the various circulars, and other publications of the Bureau that bear upon gardening should be studied. The students ought to become interested in farm literature. For this purpose as much use as possible should be made of the publications of the Bureau of Agriculture, of "The Tropical Agriculturist," "The Country Gentleman," and of any clippings from other current periodicals. The students should learn to refer as often as need may arise to such valuable books as Soule and Turpin's "Agriculture" and MacMillan's "Handbook of Tropical Planting and Gardening." It is believed that these and similar publications will always afford inspiration. The teacher of gardening needs not only instruction and experience but also interest, enthusiasm, and inspiration.

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## CORRELATION OF FIELD AND CLASS WORK IN FARMING.

By JOLLIE H. TIBBS, Principal, Central Luzon Agricultural School.

The intermediate school devoted to farming is of much more recent date than is the agricultural college. The methods and the scope of activities of the latter have been definitely worked out; but, as conditions in the college are so different from those in the school of intermediate grade, the attempt to imitate them would defeat the aims of the more elementary school. The work of the course in farming is not to develop new scientific facts, to add to the store of agricultural knowledge, or to train technical specialists. Its work is rather to train a pupil through actual experience, supplemented somewhat by field demonstrations and classroom instruction, to become a useful citizen capable of producing a comfortable livelihood from the soil.

The value of the training depends on the degree of each pupil's participation in farm activities. It follows that special care should be given to the arrangement and supervision of field and shop work. The importance of this industrial work as determining the pupil's promotion, makes it necessary to provide a grading system which is just to the pupil and yet is not too cumbersome for the teacher.

The value of individual projects over communal activities has been thoroughly shown in gardening and in home agricultural projects. Whenever possible, work of considerable duration ought to be assigned on an individual basis. The pupil should be held responsible for the work outlined, and he should be given credit for definite results accomplished. To produce a commercial crop of staple products brings in enough varied activities to supply excellent training. With the industrial work properly planned, the pupil has ample time during the three years of the course in farming to participate in the other essential activities of the school.

While individual projects are of great importance, the place of group or communal work must not be overlooked. Much work can be done most efficiently by group labor. There is a mistaken idea that group labor by the pupils demands the more or less continuous presence of an instructor. The amount of work performed by the average group under an earnest pupil acting as foreman clearly shows this error. As a rule the work

will be well done if this leader understands that he will be held responsible for the work accomplished and will be supported in his endeavors by the teacher in charge.

Group labor gives an excellent opportunity to develop executive ability and initiative. Too often a teacher discovers that some pupils make successful group leaders and then continues to appoint the same ones time after time, ignoring the claims of other pupils who might do as well or better.

A definite rotation of leaders is necessary in order to give the practice in group leading which is due to each advanced pupil. The extent to which they may be placed in charge of the work of other pupils may be open to question. Seventh-grade boys as a rule will do creditable work as foremen, and many sixth graders show considerable ability. The attitude of the pupils



A class studying rice seedlings.

toward the work and toward the leader is usually satisfactory. It depends largely on the attitude of the teacher in charge.

The grading of industrial work presents little difficulty when the pupils are assigned to individual projects. Unless the grading of group work is definitely organized, it may lead to injustice. A teacher may allow the pupil's classroom record to influence his industrial rating, thus insuring the mentally bright but industrially inefficient pupil too high a rating. Sometimes, with an inefficient system of records, a pupil will establish early in the school year a reputation for good or poor work. He may go through the greater part of the year's session on that record, unless the quality of his later work is so exceptional that it attracts attention.

A system of industrial records which is giving satisfactory results is based on the keeping for each pupil of a properly ruled, individual record form. The activities on the school farm are

numbered, and the record is easily made by entering the date, the number of the project, and the rating. These data may be entered daily in the permanent record, or they may be kept as a temporary record and a weekly summary entered in the permanent record. This will allow all of the pupil's activities throughout the year to appear on one record. This definite record of work presents special advantages in the assignment of pupils to group activities. Without such a system it is easy to reassign a pupil to the same project several times, thus depriving him of needed experience on other projects. The daily record may be kept by the group leader, but at frequent intervals it must be reviewed by the teacher who may make his record in red ink. Records kept in this manner provide a just basis for the industrial grades.



A class studying irrigation. Measuring the volume of a stream.

The importance of the outdoor work as a basis for classroom instruction is too little appreciated. Every pupil should be familiar with all of the principal crop and animal activities of the school. This necessitates the holding of many recitations at the scene of the outdoor work. The industrial work should be carefully planned by the teacher, and it should be assigned during the class period. Each pupil should know what he is expected to accomplish. Much unsatisfactory field work is due to faulty assignment of the work. Lack of care in assigning work is shown when a pupil after several days' plowing asks what is to be planted in the field on which he is working.

Properly conducted, the classroom recitation will supplement the field work and make it intelligible. The recitation should aid in developing an intelligent thinking farmer capable of bringing increased knowledge and reasoning power to bear on

his problems. Little time can be spared for the classroom study of material which does not bear on the pupil's present or future problems. It may be interesting to the pupils to know that with a transplanting machine several times as many plants can be set out with the same amount of labor as can be planted under local conditions. This information, however, is worthless compared with a knowledge of the correct time at which to transplant rice seedlings, and the characteristics of the seedlings of different varieties at different ages. Information not bearing directly on the work of the pupils is of importance as supplementary reading matter, but it is not entitled to prolonged discussion in class.

Definite instruction should be given on the crops with which the pupil will be concerned later in life. Practically every region has one or more principal crops on which the prosperity of the district depends, and the production of which will usually determine success or failure. These crops should receive special emphasis in the localities to which they are adapted. It is a waste of time for a pupil in the plain of Central Luzon to devote more than a limited amount of time to the study of abacá, which is entirely unadapted to that region. A pupil in the greater part of that locality should know all that will aid him in securing bigger and better yields of rice. The same principle applies to the other regions that are adapted to any one of the great staple crops.

Climatic conditions cause a different sequence of activities at the various farm schools, and this necessitates a different arrangement of class work. Recitations should be so outlined that they follow the field and garden activities even though they do not follow the course of study or the textbook. Careful planning will permit this, and will still provide opportunity for the study of subjects not directly connected with the field work.

It is necessary for the teacher to distinguish carefully between instruction which can be made alive by direct connection with the pupils' lives, and matter which is of value only as information. The latter type of knowledge is important, and it should be used in its proper place. The reading of portions of selected texts, bulletins, farm papers and magazines should be required. Pupils should be required to report on the articles read, in such a manner as to assure the teacher that the more important features are understood.

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## POULTRY RAISING AT THE SANTA MARIA FARM SCHOOL.

By JOSE REYNA, Teacher, Santa Maria Farm School.

The raising of Cantonese chickens was begun at Santa Maria in 1914. The chickens were somewhat more than a year old when they reached the farm school. Although they were of pure stock, they were not entirely different from the native variety. In color they were uniformly yellowish brown. Soon after their arrival, the eight hens began to lay, and at the end of the first month they had laid 117 eggs. During the second month, they laid 140 eggs. About the middle of this month, four hens wanted to set but they were soon broken. As there was not a pen on the farm, the parish priest kindly consented to the use of his stable. Six of the original hens are still living, and have averaged 72 eggs from January to August of this year.

A daily and monthly poultry record is kept. Every day four pupils are detailed to guard the poultry yards. Each guard keeps a record of the chickens, reporting to the teacher in charge. He cleans the yards, prepares the food, and takes care to follow the feeding program closely. Nests, roosts, troughs, and yards are disinfected twice each month. Lime, and carbolic acid well diluted with water, are used for this purpose. The young chicks are well looked after.

Corn, rice, meat, and eggs form the main part of the daily rations. Green feed such as cabbage, pechay, lettuce, mustard, endive, corn, and grass, are fed abundantly. Frogs, tadpoles, and insects form part of the meat diet for the first ten days. Only one or two kinds of feed are given to the youngest chicks, the chief feed being biscuits of fine corn meal slightly soaked in water.

Chickens of different ages are kept in separate yards. Usually ten laying hens and one rooster have a yard by themselves so as to avoid inbreeding. Other yards contain more hens and roosters. The mothers of the little chicks are placed in a big, shaded pen with woven bamboo walls which prevent other chickens from getting in, and give protection from hawks. The walls are so made as to let the chicks in and out of the pen at any time.

Chickens attacked by any disease are at once taken to the poultry hospital. This is a double-room pen located under small shade trees, 200 meters distant from the other yards.

The temporary pens are made of bamboo with cogon roofs. This type of poultry house meets the demand for pens on the farm. It also helps the pupils and others interested in poultry

raising to gain practical ideas for their home projects. Many who wish to raise chickens cannot afford to build elaborate poultry houses, but they can afford bamboo coops like those on this farm. The cost of material for one of these houses ranges from ₱0.60 to ₱1.50.

The Cantonese hens are good layers as compared with native fowls. A good hen that receives proper attention will lay from 160 to 190 eggs a year. A native hen of the same grade and with the same amount of attention, will lay from 70 to 100 eggs a year, but many lay only from 30 to 60. Another argument in favor of the Cantonese chickens is that the hens mature early. Some of the pullets hatched on July 5, 1914, began laying on November 2, 1914, while a native pullet hatched on December 9, 1914, did not begin laying until June 30, 1915.

The only objection to the Cantonese chickens is that the hens are poor setters, a characteristic of many breeds noted for their good laying qualities. Because of this fact the school is now using setting hens of native stock. Sixty-five to 85 per cent of the eggs placed under native hens hatch, and 100 per cent is not uncommon. The best time for hatching is during February and March, while the poorest time is in May and June. Some may wonder where setting hens are obtained. The people in Santa Maria are industrious and have the right kind of school spirit. If the teachers ask them to lend the school one or two of their setting hens, they do it willingly. They are given a pair of Cantonese chickens when the hens are returned.

Home projects in poultry raising to the number of a hundred are being undertaken by the pupils of the Santa Maria Farm School. Each pupil is given two hens and a rooster, or 13 eggs if the number of chickens at the farm is not sufficient. He must have an assistant to look after his chickens when he is in school. These two persons are required to follow the methods in use at the school and to report results to the teacher. Many boys have raised over 100 chickens since last June. They expect to raise more this year. The hens sell for one peso and the roosters for two pesos each. Orders from Tayabas, Manila, La Union, and from many towns in Ilocos Sur are refused because the home demand for Cantonese chickens is so great. Pupils may dispose of their products whenever they wish, and they may do as they please with the money; but they are advised to use it for school supplies, or to deposit it in the Postal Savings Bank. Some of them, however, use the money for their living expenses, while still others are saving it for their high-school education.

CHICKS FROM 2 TO 10 WEEKS OLD.

	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
6.30 a. m.-----	Half-cooked rice with hard-boiled eggs.	Half-cooked rice with hard-boiled eggs.	Half-cooked rice and corn meal with hard-boiled eggs.	Half-cooked rice with hard-boiled eggs.	Half-cooked rice with hard-boiled eggs.	Half-cooked rice and corn meal with hard-boiled eggs.	Half-cooked rice with hard-boiled eggs.
8.30 a. m.-----	Corn meal soaked in water.	Corn meal soaked in water.	Corn meal soaked in water.	Corn meal soaked in water.	Corn meal soaked in water.	Corn meal soaked in water.	Corn meal soaked in water.
11.30 a. m.-----	Half-cooked rice	Half-cooked rice	Corn meal mush.	Half-cooked rice mixed with bran.	Corn meal soaked in water.	Corn meal mush.	Half-cooked rice mixed with ground beans.
3.00 p. m.-----	Half-cooked rice and corn meal mixed with coconut.	Half-cooked rice and corn meal well mixed.	Half-cooked rice and corn meal well mixed.	Corn meal mixed with coconut.	Half-cooked rice and corn meal well mixed.	Half-cooked rice and corn meal well mixed.	Corn meal mixed with coconut.
5.30 p. m.-----	Corn meal soaked in water.	Corn meal and chopped meat well mixed.	Corn meal and chopped meat well mixed.	Corn meal and chopped meat well mixed.	Corn meal and chopped meat well mixed.	Corn meal and chopped meat well mixed.	Corn meal soaked in water.

Well-chopped green feed such as cabbage, pechay, lettuce, mustard, endive, corn leaves, or grass should be given between meals.

CHICKS FROM 10 TO 20 WEEKS OLD.

6.30 a. m.-----	Half-cooked rice with hard-boiled eggs.	Half-cooked rice with hard-boiled eggs.	Half-cooked rice and corn meal with hard-boiled eggs.	Half-cooked rice with hard-boiled eggs.	Half-cooked rice with hard-boiled eggs.	Half-cooked rice and corn meal with hard-boiled eggs.	Half-cooked rice with hard-boiled eggs.
11.30 a. m.-----	Half-cooked rice and coconut.	Half-cooked rice	Corn meal mush.	Half-cooked rice mixed with bran.	Corn meal mixed with ground beans.	Corn meal mush.	Half-cooked rice mixed with ground beans and coconut.
5.30 p. m.-----	Corn meal soaked in water.	Corn meal and chopped meat well mixed.	Corn meal and chopped meat well mixed.	Corn meal and chopped meat well mixed.	Corn meal and chopped meat well mixed.	Corn meal and chopped meat well mixed.	Corn meal soaked in water.

Well-chopped green feed should be given between meals.

GROWN CHICKENS.

6.30 a. m.-----	Unhulled rice	Clean rice	Unhulled rice	Clean rice	Clean rice	Clean rice	Clean rice.
5.30 p. m.-----	Cracked corn	Cracked corn mixed with meat.	Cracked corn mixed with meat.	Cracked corn mixed with meat.	Cracked corn mixed with meat.	Cracked corn mixed with meat.	Cracked corn.

Green feed should be given between meals.

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## AGRICULTURAL INSTRUCTION IN THE PRIMARY GRADES.

By J. C. SCOTT, Division Superintendent of Schools, Cagayan.

Gardening is at once the most practical and popular of industrial courses assigned to boys of the primary grades. It is the most practical because 70 per cent of the people of the Philippines depend upon agriculture for a livelihood; the most popular because there exists the hope that the schools will train boys to become farmers whose remuneration will be greater than that of the Philippine farmers of today.

The farm schools of intermediate grades together with the intermediate schools giving gardening in the sixth grade are producing highly satisfactory results. Boys taking these courses are being equipped to become successful farmers. The number of intermediate graduates, however, who go back to the farm is comparatively small, too small in fact greatly to influence the haphazard methods now used on the farm. Higher education, or positions with moderate salaries, appeal to these graduates more than does the farm.

Yet the farm schools do have a strong influence in their vicinities. The methods used by the schools are adopted; more modern machinery is in operation; hills of corn are more carefully spaced, more attention is given to seed selection, improved methods of planting and of harvesting are adopted, and the land is more carefully cultivated. In fact, on such farms a rivalry appears to exist among the farmers themselves to outdo one another in thrift. Actual demonstration work in each farming community is the most effective way to reach and teach the great body of Philippine farmers. Any other method will be slow.

The Bureau of Education, with its central and barrio schools in every agricultural community, is the only organization available for demonstration work on as large a scale as is desirable. It has been found that the influence of a successful school farm or garden does not extend beyond a very limited radius. From planting time till harvest farmers must frequently observe and inspect the crops near their own before they adopt the methods demonstrated to be superior. Moreover, the personal influence of the teacher is very necessary.

Should the primary schools undertake this agricultural dem-

onstration work on a much larger scale than at present, it would be advisable to limit the industrial courses regularly assigned as work for boys. United effort with one object in view would be necessary. The boys of all four grades in a small barrio school, or of two or more grades in the larger primary schools, could be assigned to this work, as conditions warrant. In fact, the primary farm schools, so successful among the non-Christian people, would prove of great value in a large number of Christian communities. Such schools could be established only where a considerable area of fertile land is available—one hectare or more to each class of forty boys.

A course in gardening for primary boys, which would include the cultivation of plots of field crops, would fill the needs in many schools today and would require but little more additional land. Such a course should be patterned very closely after the course in gardening now authorized in intermediate schools. In most barrios land is available for rent or purchase at very reasonable rates. The 1 by 4 meter individual vegetable plots could be continued and there could be added several fields of 100 to 200 square meters each for staple farm crops, an orchard, and a nursery.

Fields of corn grown from selected seed, and properly spaced and cultivated, could supply seed corn for the farmers of the neighborhood, and would surely increase the next year's harvest. The Philippine farmer is too busy with his fields of staple crops to consider seriously the introduction of additional varieties of garden vegetables. But his loyalty and coöperation would be assured if the primary school, the only one which he knows and calls his own, would adopt the one industrial course aimed to increase and build up his farm rather than to change it into a truck garden.

In such schools as have land available primary gardening is, as a rule, assigned to only part of the pupils of Grades III and IV. In some places, the boys of Grade II, and in a very few schools the boys of Grade I, either assist those of the higher grades, or take the regular course. In the larger central schools the classes are of sufficient size to warrant the assignment of one teacher to no industrial subject but gardening. In most of these schools, perhaps, there would not be land available for more than one or two grades to take gardening, and for the larger towns, the establishment of home industries would be more practicable. In such schools, however, the sons of local farmers should be selected for assignment to the gardening course.

In small barrio schools, conditions are entirely different. In

a one-teacher school, it is quite impossible properly to instruct from one to four grades of boys and girls in several industrial courses all at one time. The teachers find themselves unable to instruct girls in plain sewing and embroidery, Grade I boys in hand weaving, Grade II boys in basketry, perhaps, and at the same time to supervise the class of Grades III and IV boys at garden work. The only remedy for such a condition is the elimination of courses, and the problem will be greatly simplified and better results will be obtained by assigning all the boys to gardening. With such specialization it would be possible to obtain trained instructors for teaching this subject. Graduates of provincial and other farm schools would be available for appointment. Institute and vacation-assembly training would add to their efficiency. The difficulty of obtaining municipal teachers qualified to teach several courses of industrial work would then be largely avoided.

Continuity in the assignment of industrial work in the primary grades is as important as in higher grades. By modifying the primary course in gardening to make it more like the intermediate course, gardening could be taken by boys during the entire four years of the primary course. The objection may be offered that first-grade boys are too small for this kind of work, but a visit to the farm homes will show that they do a considerable amount of farm work. In rice harvest it has been observed that these boys often are kept from school to assist on the farm while their brothers in Grade III remain in school. The fence building and the plowing may be done by the larger boys of the school. Even in this work the smaller boys will be of assistance. In field work, with light tools, there is much that they can do. A 6-year-old boy will take as great an interest in a 4-meter plot as an older boy will. In the various grades, the nature of assignments may be changed. For instance, second-grade boys may be assigned to field work, and those of the third grade to the orchard and nursery, and to such experimental work as fertilizing plots.

It is highly important that arrangements be made to provide for the care of gardens and field plots during vacations. Much labor is lost through destruction of plants and fences during these periods. Much more than the vacation time is lost, for the work of the preceding year must be begun over again. Crops not matured are often not made use of. At least one teacher should remain on duty during vacation periods. The gardens must be permanent to be of the greatest value.

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## AGRICULTURAL TRAINING OF MANOBO BOYS.

By C. A. BELKNAP, Acting Division Superintendent, Agusan.

The Manobos in their primitive state were a very simple people who lived in isolated groups between which blood feuds were common, and who looked upon the "Bagani," a man who had eight or more killings to his credit, as a headman to whom the greatest respect was due. They knew little about the value of coins and were an easy prey to those traders who ventured among them. Often they were cheated of half their money by the simple process of making change.

Their agricultural pursuits were the most primitive, it being their custom to select a site for their farms on the edge of the forest and to cut down the trees. Without further clearing, they planted such crops as camotes and corn. This land was used for one or two crops, or until the grass sprang up and choked the crops, when it was abandoned and a new clearing was made. The chief aim in founding schools among these people has been to induce them to establish homes in or near the settlements, to demonstrate to them the possibility of permanent farms, and to give them an elementary academic education which will fit them to compete with their neighbors in trade and social activities.

The first schools among the Manobo people, since American occupation, were established in 1903. Very little was done toward extending the work until about 1905, when several new schools were opened. These have been increased in number until at present there are 17 settlement farm schools and one agricultural school, where a total of 1,223 Manobo children receive instruction in agriculture. Funds have been made available for the opening of at least six new schools during the year 1916-17. This will add over 300 to the number of children already receiving instruction.

At first many difficulties were encountered, among which were the superstitions of the Manobo people, and the trouble in securing teachers who would remain at the isolated stations. A young man from Manila was sent to Bunagit, where one of the most prosperous schools is now located. After about two days' service, having witnessed a "diwata," a dance following the death of a Manobo, he left the settlement and returned to Manila

thankful to escape with his life. Even now, teachers from outside the Province of Agusan have fears until they learn that they are as safe among the Manobos as among their own people. Health conditions in the beginning were poor. On account of the dense vegetation surrounding the settlements, malaria was prevalent.

Till 1909 Visayan was taught in most of the Manobo schools, the idea being to prepare the people to deal with the Visayan traders who visited the settlements. In 1909 English was introduced in all schools, and a better class of teachers was secured.



Grade I boys raising corn at a settlement farm school, San Vicente, Agusan.

No industrial work of any type was attempted until 1911, when gardening on a small scale was introduced. This was enlarged upon in 1912, when the present system of school farms was established. The Manobos did not take kindly to the work at first, and they constantly brought up the fact that former teachers did not require the children to work. When clearings were made, people refused to send their children to a school where a "baliti" tree had been cut down, as they believed that the "busao," an evil spirit supposed to make his home in the baliti, would take revenge on the school.

Practically all school sites were dense forest which required a great deal of hard work to clear, and progress was slow. Since 1912 the work has been pushed forward steadily, clearings have

been enlarged, and a gradual change in the sentiment of the people has taken place. At present all schools have from one to six hectares under cultivation, and new land is rapidly being cleared in order to enlarge the farms.

The plan followed in these settlement farm schools is to devote one half of the day to farm work, and the other half to academic work. The schools continue in session throughout the entire year, the pupils being given their vacation by grades. Thus the farming continues without interruption. Teachers desiring vacation are relieved by others until their return to duty. In connection with these settlement farm schools there is also an agricultural school for Manobo boys maintained at Bunauan about 150 miles up the Agusan River.

Several of the boys who completed the work in the Bunauan Agricultural School have established permanent farms. They now have several thousand abacá plants about ready to produce. Others have taken up the work of trading among their own people, the result being that the Manobos are more honestly dealt with.

The boys from the settlement schools are helping in the handling of the products from the farms of their parents, and in securing better returns in trade for those products. The value of their schooling is recognized by the Manobo people, and the children are consulted in practically all commercial dealings of their parents. When the people bring a boat load of products to Butuan for sale or trade, they often bring along one of the more advanced pupils of their school to assist them.

The distribution of seeds and plants by the schools, and the growing of new food crops have greatly improved the diet of the Manobos. The rotation of crops, although not yet understood by the people, is being gradually introduced among them. The chief value in their opinion lies in checking the grass and weeds by keeping the ground covered with crops suitable to the season. In a few settlements, community farms modeled after those at the schools are being successfully maintained by the people. In the establishment of farms, the forest and dense vegetation about the settlements is being cleared away. There is a consequent decrease in malaria.

Work animals together with modern plows and cultivators have been introduced by the schools in a number of the settlements, and the boys are being taught to plow. This will have a far-reaching effect, for as the people clear their land they will realize their need for the work animals, and they will secure them, together with modern implements.

Steps are being taken to enlarge all school farms to 16 hectares. This will give plenty of room for the planting of permanent crops like cacao, coconuts, and hemp.

The popularity of the schools is on the increase throughout the upper Agusan valley. This is shown by the numerous requests received from the various settlements for the opening of new schools, and by the willingness of the people to give all possible aid in the construction of buildings and in clearing new sites.

#### SCHOOL CREDIT FOR HOME IMPROVEMENT.

Formerly credits were exclusively based on work done in school during school hours, or on work assigned for preparation at home. There has been a gradual departure from this practice, the most recent being that of giving credit to pupils for work done at home for the good of the household. In the Philippine public schools, this innovation is claiming attention, especially in the case of industrial activities.

Since present-day education aims to make home better through the influence of the schools, this new policy is in keeping with the trend of educational evolution. The school seeks to establish a closer relationship between itself and the home. Improvement in the home indirectly promotes the efficiency of the school by directly influencing the individuals who go to school.

The credit plan for home work places the school in a position further to demonstrate its practical value to the community. In a bulletin on "Education for the Home," issued by the United States Bureau of Education, Dr. B. R. Andrews says: "The child is school minded. For this reason the child can be reached through the school. The school can help the home by reënforcing the natural interest of the child in the home, by imparting knowledge necessary in home activities, and by affording some practice in them." (J. M.)

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"Work, in every hour, paid or unpaid; see only that thou work, and thou canst not escape the reward; whether thy work be fine or coarse, planting corn or writing epics, so only it be honest work, done to thine own approbation, it shall earn a reward to the senses as well as to the thought."—Emerson.

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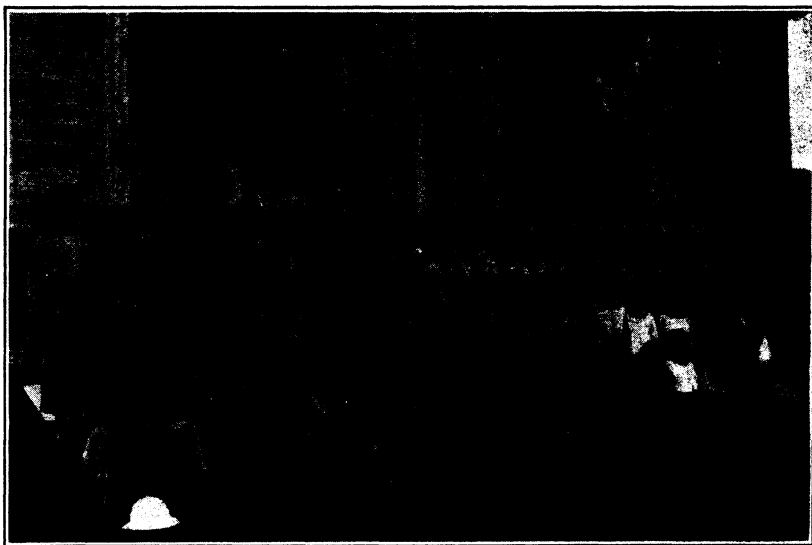
"Perhaps the most valuable result of all education is the ability to make yourself do the thing you have to do when it ought to be done, whether you like it or not."—Huxley.

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## AGRICULTURAL EXTENSION IN THE ILONGOT SETTLEMENT FARM SCHOOLS.

By B. FIELDEN NUTTER, Supervising Teacher, Non-Christian Schools, Nueva Vizcaya.

At the present time there are only two Ilongot settlement farm schools in Nueva Viscaya; they are at Casibu and Maquebeña, the one at Campote having been closed because of its nearness to the other two schools, and because the site was not



Teachers and pupils of the Casibu Settlement Farm School. There are three of these schools among the Ilongots of Nueva Vizcaya.

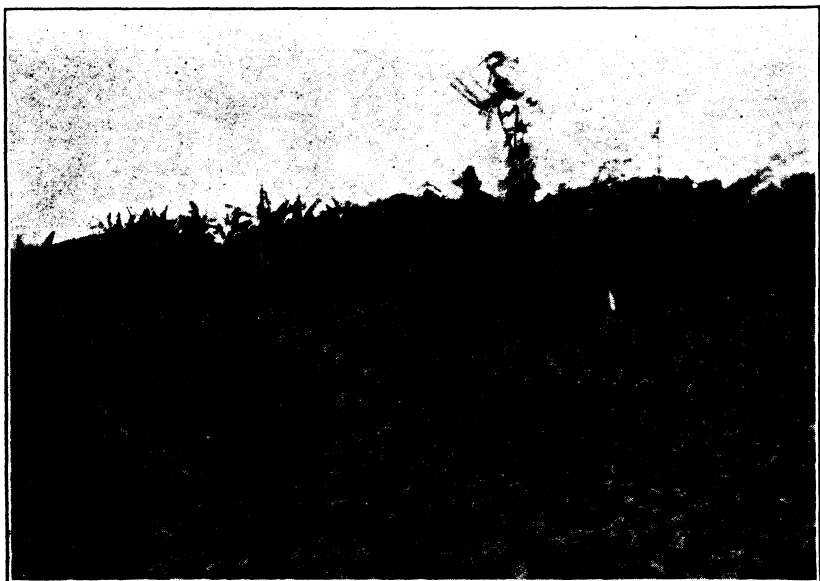
suitable. The pupils transferred to Casibu. These two schools form natural centers for about 20 Ilongot rancherias, 12 of which have pupils in school. Plans are being made for bringing in pupils from all of them in the near future.

There are three teachers in each school. There is an enrollment of 53 with five grades in Casibu, and an enrollment of 40 with four grades at Maquebeña. This makes it possible to give the full primary course in each school, and to give higher work to pupils who show that they have the qualifications necessary for them to become teachers.

The sites at both schools were surveyed during the past year.

They contain 143 and 7.8 hectares, respectively, and arrangements are being made to inclose them with wire fences as soon as possible. The farms have been laid off into regular fields ranging in size from 2,000 to 3,000 square meters. The areas have been made so extensive, largely for the purpose of getting the teachers out of the habit of planting farm crops in small plots.

Great attention has been given to the planting of bananas, papayas, pineapples, and camotes, and to the raising of upland rice. The total amount now under cultivation at both schools



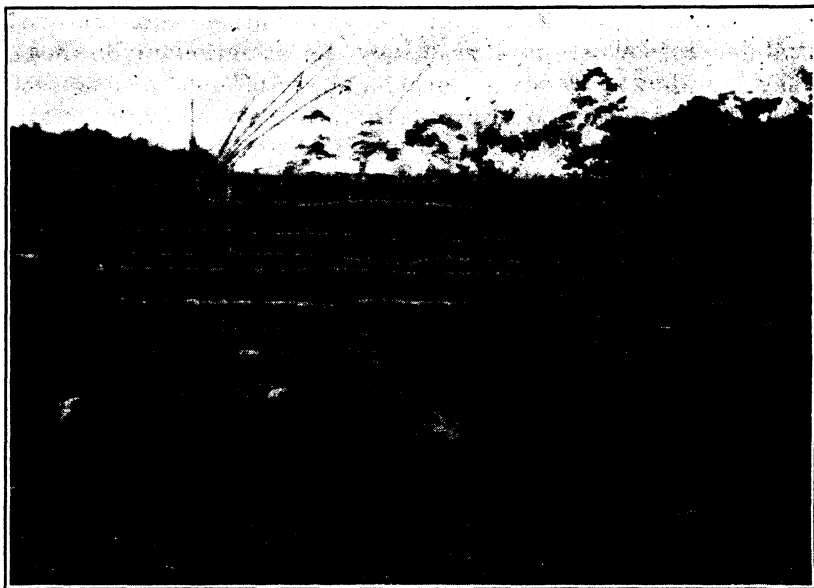
What the pupils at the Ilongot schools do. Bananas, pineapples, and camotes at Maquebenga.

is about 5 hectares. There are more than 2,000 banana and pineapple plants and papaya trees growing, and it is planned to continue planting.

The total production of rice for the past year was 56.5 cavans. This was consumed by pupils or was fed to animals on the farms. The camotes are so planted that there may be a harvest each month. The records show that for some time the average monthly production of camotes has been about 30 cavans. The records for the past year show that the total value of all animals, and farm, garden, and fruit crops was ₱1,036.08 which is an average of ₱207.21 per hectare.

The two schools are stocked with 30 hogs, 70 chickens, and

5 carabaos. The Bureau of Education last year furnished this division with 8 Cantonese chickens and 2 Berkshire boars. Of these 3 chickens and 1 boar were sent to the Ilongot schools. There are now at the two schools, 10 pure Cantonese chickens, and 9 fine half-breed Berkshire pigs.



The hog herd at the Maquebenga Settlement Farm School. The Ilongot boys are taught that the domestication of hogs furnishes a better and surer meat supply than does hunting.

The agricultural work carried on in the settlement farm schools is slowly but surely reaching the Ilongots. This is demonstrated in the better planting of fields, the rotation of crops, the introduction of Moro corn, Turkish tobacco and improved papayas, the greater variety of farm and garden crops, and the better pigs and chickens one sees when visiting the rancherias.

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“God Almighty first planted a garden. And indeed, it is the purest of human pleasure. It is the greatest refreshment to the spirits of man; without which, buildings and palaces are but gross handiworks: and a man shall ever see, that when ages grow to civility and elegance, men come to build stately, sooner than to garden finely: as if gardening were the greater perfection. I do hold it, in the royal ordering of gardens, there ought to be gardens for all the months in the year; in which, severally, things of beauty may be seen in season.”—Sir Francis Bacon.

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## HOG RAISING AT LAGANGILANG.

By JAMES A. WRIGHT, Principal, Industrial School, Lagangilang, Abra, Ilocos Sur.

There are very noticeable differences in native hogs. In most localities the owner pays practically no attention to his hogs. They are allowed to run at large, and are offered so little food that they are forced to forage. The pigs have a sickly appearance and never develop into heavy, well-shaped hogs. Such hogs are not profitable. In some places the pigs are given enough substantial food to enable them to develop and grow into good-sized hogs in a short time. These bring profit to the owner.

Lagangilang is a community where hogs should be at their best. Corn and legumes, the ideal foods for hogs, can be grown there in large quantities, much of the land being especially adapted to the raising of these crops. It is doubtful, however, if there is a community where a larger percentage of poor hogs is to be found. At the industrial school located at Lagangilang, it was found impossible to obtain a good grade of pork for use in the mess which had to subsist about eighty pupils.

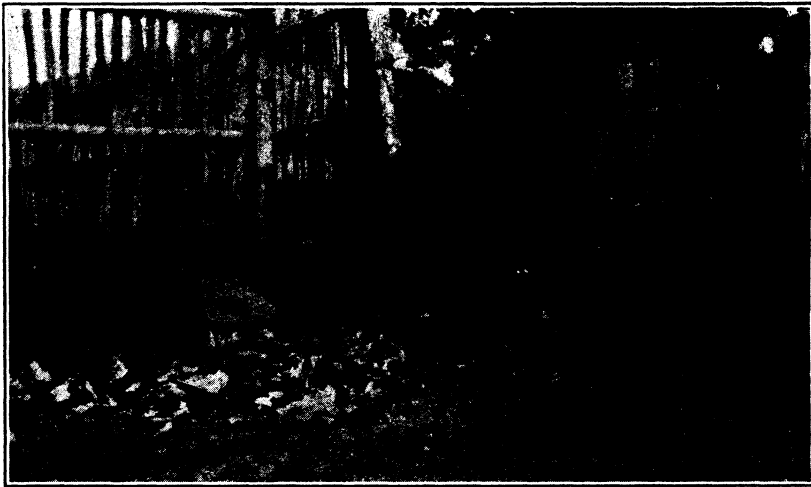
It was evident that a part of the school's work should be a campaign for better hogs. The first step was to secure a Berkshire male pig and to give him such care as would encourage perfect growth. The next step was to secure some native sows and to keep them in good condition for producing young.

The Bureau of Education furnished the school with a good boar. As there were no funds with which to purchase sows for breeding, and as the improvement of hogs was a movement which was started for the benefit of the whole community, three sows were secured from their owners on the share basis. The litters were to be divided equally between the owners and the school. Although this plan would not be profitable to follow indefinitely, it served to give the school a start, not only in hog-raising, but also in securing the interest of the community. In order better to establish the idea that any improvement was meant to be shared by all, a second Berkshire boar was obtained from the Bureau of Agriculture for the township of Lagangilang. This helped to stir up a general interest in pigs. It will do much toward spreading an improved breed of hogs.

The pupils do all of the work of constructing shelters, inclosures, and troughs for the hogs. The selection of suitable sites

for the location of houses and pens, securing proper drainage, keeping the hogs free from lice, furnishing sufficient nourishing food, and weaning little pigs give the pupils practical lessons in hog raising. All the boys studying this subject have practice in caring for the school herd, each being assigned to the care of the pigs for a certain period under the direction of a teacher.

Lack of sufficient land upon which to grow crops has made the problem of properly maintaining the herd a difficult one. Most reliance is placed upon legumes which are easily and quickly grown, and which supply an abundance of green, nutritious food. Cowpeas are the best for green food. A hardy variety of native



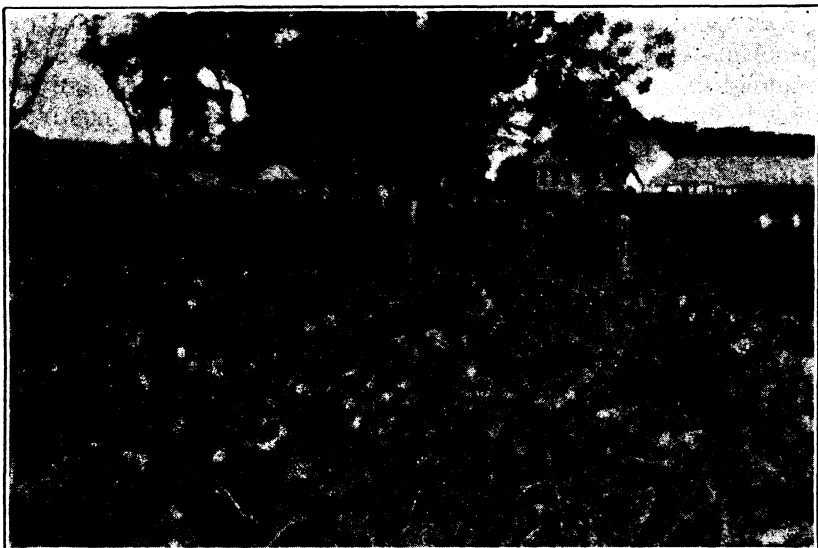
The Berkshire boar of the Lagangilang Industrial School. The first well-bred hog to be taken into the Tinguian country.

bean known as "patani" is produced at the school, and the ground and dried fruit is used as a part of the ration. When corn is added to this, a very satisfactory diet is secured. Banana stalks and various weeds are made palatable by cooking, and offer variety. When sufficient papayas are available, they are also used.

The school now has a herd of 64 pigs of various ages, 23 of which are grade. These are the progeny of nine sows which were bought by the school at about ₱8 each. Two sows taken on the share basis are soon to farrow, promising a further increase of about 12 pigs. When these sows farrow and are bred again they will be returned to the owners, as the school will then have superior stock of its own.

Pork forms a large part of the meat consumed by the people

and there are many hogs produced in Lagangilang, but in comparison with the number of hogs raised, the amount of pork produced annually is very small. This has been the result of breeding a degenerated type of hogs and giving them too little attention.



Hogs in cowpeas. The way the boys at Lagangilang are taught to raise hogs.

The improved type of hogs is now available. It is becoming generally understood that hogs need attention. A knowledge of how best to care for them is gradually being attained by the people. So with the school as a center for supplying aid and advice, progress in better hog raising among the people of this community is assured.

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#### PAPAYA GUM.

A study of the properties of papaya gum made from the latex of *Garica papaya* has resulted in improved methods for preparing this important commercial product. The results already obtained show conclusively that gum may be made in the Philippines which is equal, if not superior, both regarding color and activity, to any now on the world's market. The constantly increasing demand for papaya gum as a substitute for pepsin and the well-known fact that satisfactory gum is difficult to obtain, assure a steady market for a high-grade Philippine product.—Philippine Trade Review.

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## GARDEN DAYS WITH PRIZES.

By SILVINO QUINTANO, Supervising Teacher, Ligao, Albay.

For some years garden days without prizes have been observed in Albay. Their purpose has been the selection of products for the annual agricultural competition held in connection with the Bicol meets. Garden days with prizes were instituted during the last school year. To give publicity and to promote the success of the day in each locality, teachers discussed the matter in their classes, and lists of prizes were posted in conspicuous places. Teachers visited the homes of farmers and invited them to participate in the contests. The announcement of cash prizes aroused enthusiasm. In spite of the destructive baguios of 1915, there were more exhibits, their quality was far better than in previous years, and the attendance was greater.

It was expected that one half of the money for the payment of prizes would be furnished from general funds. The municipal councils authorized the transfer of the necessary money, but their action in some cases was disapproved by the provincial treasurer. In those instances the sums were reduced to the maximum amount that could be spared from school funds. Supervising teachers prepared lists of proposed prizes and these were submitted to the division office for approval. The division superintendent made some changes where it was learned that no money could be had from the general funds. Two sets of prizes were offered, one for farmers and the other for pupils, the amounts ranging from 20 centavos to ₱2. Prizes were offered for the best individual exhibits in any class. In some cases first and second premiums were given. Where single prizes only were offered, the judges usually indicated their second selection by means of red ribbons.

The schools of the different districts took part in the garden days of their respective municipalities, each being represented by a booth. The grades of central schools were classified separately, and the judges numbered all of the booths according to their relative merits. A friendly rivalry resulted, and this contributed largely to the success of the events. In some of the towns there were exhibits of both boys' and girls' industrial work, and at Ligao, there were academic exhibits; but prizes were not provided for these.

In general, teachers were made responsible for farmers' as well as pupils' exhibits. In some places municipal officials assisted, and there the best results were secured. The farmers took a keener interest because there was no competition with pupils. The fact that the local exhibitions were preliminary to the inter-provincial agricultural contest also encouraged them. At Polangui they were so enthusiastic that they held a meeting in the school building at the close of garden day. The president of the Provincial Agricultural Society presided, and many matters of importance to farmers were discussed.

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#### FARMING.

In America the farmer lives on his land and raises his own grain, vegetables, fruits, live stock, and poultry. This makes him to a high degree independent. In the Philippines the farmer generally lives in a crowded village and depends on one crop.

It would be well to teach the Filipino youth how to develop homesteads into little farm homes, with all their conveniences and economic advantages. With this purpose, small farm schools might be organized throughout the Islands, the industrial features to be patterned after the work on a well-regulated small farm. The schools ought not be large, and they ought to provide instruction for both boys and girls. In addition to their academic work, the boys should do the work of men, and the girls should do the work of women on the farm. Both classes of work ought to be as nearly complete as circumstances will permit. (W. J. C.)

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#### FERTILIZER FOR ROSES.

As the result of a series of experiments carried on by Dr. F. W. Muncie, of the Department of Floriculture at the University of Illinois, the interesting conclusion has been reached that the use of acid phosphate as a fertilizer increases the rate of production of roses to a remarkable extent, perhaps a hundred times.—University Farm Press News.

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"I pray you, as long as you are a part of an institution, do not condemn it. Not that you will injure the institution—not that—but when you disparage the concern of which you are a part, you disparage yourself."—Elbert Hubbard.

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## CLEAN-UP WEEK IN ORIENTAL NEGROS.

By L. P. WILLIS, Acting Division Superintendent of Schools.

As the work accomplished during clean-up week in 1914 received much favorable comment from the people, few difficulties were encountered in securing the hearty coöperation of officials and townspeople of Oriental Negros for its proper observance in 1915. Every town, and practically every barrio, in the province joined eagerly in making the week a success.

In promoting interest in the event, Honorable Felipe Tayko, provincial governor, took an active lead. Early in November, a meeting was called in which the heads of the various departments and Bureaus of the Government, Insular and provincial, participated. A provincial committee was organized for conducting the campaign for the whole province. Plans were formed, and instructions were sent out to all municipal officials for the organization of municipal and barrio committees. The same general plan was adopted by all municipalities. The municipal president took the lead, committees were organized, and the municipality was divided into districts, each district being under the supervision of a committee member. He in turn parceled out the district, and appointed an inspector for each subdistrict. These inspectors visited the houses in their respective districts every day, reporting on a blank form the comparative condition of the premises each day. These inspection reports were submitted at the end of the week.

### *Model of blank form.*

District No. 5.

Committeeman *Juan de la Cruz.*

Name of the inspector, *Marcos Dató.*

Street and house number.	Name of the resident.	Sanitary condition.					
		13th.	14th.	15th.	16th.	17th.	18th.
4, Taft .....	Pio Neri .....	Bad ..	Fair ..	Good ..	Good ..	Very good ..	Very good.
8, Escolta .....	Pablo Yui .....	Fair ..	Fair ..	Good ..	Good ..	Good .....	Very good.
15, Real .....	Jose Tabó .....	Bad ..	Good ..	Good ..	Good ..	Very good ..	Excellent.

A spirit of emulation was aroused in the various towns and barrios. Not only individuals, but communities vied with one another in getting the most "clean-up" work done during the week.

## THE SCHOOLS' PART IN CLEAN-UP WEEK.

As in every other social feature, the schools played a prominent part in this. Not only were schoolhouses and grounds cleaned and put in good condition, but streets surrounding the schools, and in some towns the municipal plazas, were cleaned by the school children. In addition to this, supervising teachers and principals served on the local committees and acted as inspectors. Prior to clean-up week, teachers explained to the pupils what was to be done during the week, and how and why it should be done. Pupils were urged to clean their own houses and surroundings. A great deal was accomplished in this respect, even small children taking up the work of cleaning around the houses. The people cleared away rubbish heaps, dug ditches, and drained pools. In many instances, flowers and shrubs were planted, and fences and buildings were repaired. Teachers and larger boys were detailed as inspectors of pupils' homes.

The week was observed in one of the towns as described below:

The town was divided into 14 districts, and for each district two schoolboys from either the fourth or third grade were appointed as inspectors; all male teachers were appointed as general inspectors.

Before the clean-up week, the boys cleaned half of the road and dug ditches around the school grounds. The girls cleaned the inside of the schoolhouse and the domestic-science cottage.

On the last day of the week, the teachers and municipal officials made a general inspection of the town.

## THE PROVINCIAL SCHOOL.

The provincial school played an active part in clean-up week in the town of Dumaguete. In addition to being required to care for his own premises, each student of the secondary and intermediate courses, was assigned the duty of instructing five heads of families of Dumaguete with reference to the meaning of the week, and of requesting their coöperation. The names of these five families were reported to the principal. In most cases, these instructions and requests were received favorably.

At the request of the municipal officials, a large number of boys of the provincial school were detailed as inspectors of districts throughout the town. The provincial school grounds, and the surrounding streets were cleaned and put in good condition.

As a result of clean-up week, schools, streets, and plazas were made more sightly; homes were put in a more sanitary condition; and parents as well as children received valuable instruction in civics and in sanitation.

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## EDITORIAL.

### TWO KINDS OF AGRICULTURAL INSTRUCTION.

There is a great popular demand for agricultural education in the Philippine Islands. The people are beginning to realize that on the farmer rests the advancement and prosperity of the whole country, and all are urging a higher regard for his welfare. The demand for more agricultural schools is based on the supposition that such instruction will positively equip the young man for success in the practice of farming. It is well to consider carefully the various kinds of agricultural instruction with a view to determining which will best meet present needs.

A careful analysis of the methods in vogue in America, reveals the fact that there are two distinct types of instruction. One may be called "general" and the other "vocational." General instruction in agriculture is of the sort usually given in high schools throughout the various States, and it is made to parallel the general course. Recitations and laboratory work are given for a limited number of classroom periods each week. Instruction is made concrete to some extent, by exercises in gardening and by various laboratory tests. The objects sought may be stated as follows: (1) To give a greater appreciation of agriculture as one of the fields of human endeavor; (2) to give insight into the possible application of various sciences to this industry; (3) to develop ideals of country life; (4) to furnish concrete and attractive studies for pupils.

It is mistakenly supposed by many, that a course of this kind actually results in vocational efficiency. Experience has shown that this is not the case, except in very rare instances. Such study is primarily cultural. It gives breadth of view. The experiments and laboratory exercises make the course essentially illustrative and, therefore, attractive. It need not necessarily be taught by one having had practical experience in agriculture.

Vocational instruction in agriculture is essentially different, both as regards aim and method. It affords training which aims at mastery of the practice of farming. It deals with actual conditions and situations. The pupil must have practical work occupying at least half of his time, and the work must be subject to commercial conditions; that is, he must produce a definite

output and be able to appreciate the result of his own efforts in terms of profit or loss. He should focus his attention on the kind of agriculture which is profitable in his neighborhood. Such related subjects as science, mathematics, accounting, and economics, must be subordinated to and related with, the practical work which he is doing. Only a person who is to a reasonable degree master of agricultural practice can teach agriculture for a vocational purpose.

The vocational agricultural school is in effect what the public demands. It takes the place of the hit-and-miss apprenticeship in farming. It develops in students the ability to forecast the results of their efforts, and to plan their work with many possible conditions in view. Only such training will insure satisfactory results.

One great danger to agricultural instruction lies in the fact that efforts are being made to identify these two types of teaching. Too many educators still think that vocational efficiency can result from a course of verbal instruction in a practical subject. Most of the agricultural instruction given in the high schools throughout the various States has little effect on the vocational training of students, except that it contributes something toward the development of vocational ideals. Bookish courses in agriculture have proved a delusion from a vocational point of view.

Practical instruction in agriculture is expensive; a vocational school of this sort to be effective must be equipped with proper facilities. But it is a safe investment from which the country will reap a reward in securing more young men equipped for successful farming.

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#### HOME PROJECTS IN AGRICULTURE.

In the United States during the past ten or fifteen years there has been a great advance in the application of scientific methods to farming. It has not only influenced the farmer but it has secured the interest of American boys and girls. All through the southern, western, and northern States the large number of agricultural clubs bear witness to the fact that young people are vying with their elders to increase the quality and amount of farm products. State and local contests in different agricultural and home industries have demonstrated that the young American is a very important factor in the betterment of agriculture. Records made in the growing of farm products, in the raising of animals, and in the preserving of foods, have

brought credit to many American boys and girls. As they reach adult life, increased national prosperity is certain to result, in consequence of a more thorough and widespread knowledge of agriculture.

The movement in the United States suggests a similar endeavor for agricultural development in the Philippines. The idea of home projects is not entirely new to this country, for the corn contests of the past few years made a beginning in such work. What is needed is the application of the plan to practically all phases of agricultural activity in the Philippines. Such an undertaking is contemplated in organizing agricultural clubs for Filipino boys and girls, as announced early during this school year.

It will mean much to the individual boy or girl to become a vital element in advancing the agricultural interest of these Islands. Not only will the feeling of self-respect and independence be greatly strengthened, but ideas of thrift and business will be developed. If even one fourth of all Filipino boys and girls were seriously to undertake home projects involving the improvement of plant or animal industries, a great betterment could be made in Philippine agriculture within the next five or ten years.

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#### RECIPES.

The following recipes for guavas and lanzones were tried out at the Philippine Normal School and they turned out excellently. They are for sauce rather than for preserves, as they do not contain sufficient sugar; and it is doubtful whether they would keep long, even if put up in sealed jars.

Select 40 large guavas which are pretty nearly ripe; wash and pare them. Cut in halves and remove the seeds, being careful not to break the halves. To prevent discoloration, dip the fruits frequently in water while paring. Drop them in hot water for a minute or two. Make syrup of 3 cups sugar,  $1\frac{1}{2}$  cups water, and juice of 2 limes. Boil ten minutes and remove scum. Drop the fruits and cook until transparent. Fill freshly sterilized jars to overflowing and seal at once.

Select large lanzones. Remove the skin and separate fruit into sections, removing all membrane. Drop in cold water as fast as prepared, to prevent discoloration. Make syrup of  $2\frac{1}{2}$  cups sugar and 1 cup water for 100 lanzones. Boil five minutes, remove scum, and add the lanzones. Boil about three minutes. Fill sterilized quart jar and seal at once. Keep in a cool place.

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## RESOLUTIONS OF THE INDUSTRIAL CONFERENCE.

The annual industrial conference met at Baguio from May 1 to May 5, 1916. It was attended by division superintendents, industrial supervisors, and teachers. There was a notable increase in the attendance of Filipino teachers. The conference serves as a clearinghouse for ideas on industrial topics, and the suggestions there made have had much to do with shaping the industrial policy of the Bureau. The gist of this year's resolutions is here given.

### GENERAL POLICY.

The object of industrial instruction in the Philippines is not merely to establish household industries, but also to raise the standard of living in the homes.

Local sales of industrial products should be encouraged as much as possible; but all divisions should supply the General Office of the Bureau of Education with articles at wholesale prices in order that all may share the burden which is placed on this Bureau, and in order that commercial direction of industrial instruction may be secured.

Provinces should not reimburse the General Office of the Bureau of Education for such assistance in industrial work as may be included under the head of designs, blue prints, perforated patterns, models, and the services of traveling industrial teachers.

Pupils should receive a fixed price for the articles they produce; quality should be considered; when articles are sold at retail for a higher price than usual, the surplus of the principal should be deposited in pupils' funds.

### CONTROL OF THE GENERAL OFFICE.

The control of wholesale prices in sales should rest with the General Office.

Forms 80 to 84 are satisfactory, but form 83 is difficult to accomplish and contains little of value to the field. It should be called for at rare intervals.

In order to guard against orders that would hamper the work in the field, acceptance of orders should be left to the division offices except in very rare cases.

Forms 70 to 80 call for data which are as near an estimate as can be made of industrial school production of a division for any one year. It is impossible to estimate the products of households.

Only first quality products should be demanded from school and household. A minimum price should be placed on all salable products that are up to standard, and when these articles are not salable in Manila, they should be returned to the division for sale or for disposal to the pupils at cost of material.

In most provinces, profits from the sale of industrial products should meet the expenses of provincial industrial departments as provided by Act No. 2629.

All profits possible should accrue to the division. The cost of freight should be included in wholesale prices so that divisions near Manila can profit thereby while those at a distance will not lose by the arrangement.

Much study will be required before the necessary forms and instructions for proper administration of the sales department can be formulated. The General Office is best prepared to do this work. Commercial practices should be followed in so far as possible and the number of forms be reduced to the minimum consistent with efficient administration. Form V-A should be eliminated and all reimbursements for industrial products be made on Form 154.

Provincial industrial departments should carry a model stock department.

A credit term of at least three months should be given provincial industrial departments for materials; schools, at least two months; workers, not to exceed one and one half months.

The distribution of materials from the General Office would be more satisfactory to the field, than the distribution from the Bureau of Supply.

#### INDUSTRIAL CENTERS.

Any one capable of doing the work should be allowed to join industrial centers. Organizers and leaders should be selected from the most capable workers, regardless of how they have been trained.

Adults can best be interested by having a convenient center where materials can be secured readily, by receiving cash payment for articles delivered, and by being allowed to do the work in their homes.

The present system of accounting for articles sent from a

barrio school to a division office, and from a division office to the General Office is not satisfactory. All articles should be invoiced by tag number in order to prevent confusion in the distribution of money received from sales.

Changes in prices as entered on Form 151-B cause trouble for teachers keeping these records, and therefore the total cost of articles should not be entered on this form in ink until the articles are sold.

The present system of industrial accounting cannot be applied successfully to household production, but a card similar to Form 152 might be used as a record of individual work.

Until a leader can be secured to handle the work, principal teachers should be used to represent the division office in dealing with household workers. In order to provide for immediate payment for articles, money should be appropriated from provincial funds for the use of division industrial departments, the amounts so advanced to be determined by the need of each individual province.

Not more than 50 per cent of the funds available for the use of the provincial industrial department should be tied up in stock for which no specific orders have been received.

The division industrial force can be relied upon for the commercial inspection of industrial articles.

In accepting orders from firms, the Bureau of Education should safeguard itself by requesting a bond or cash deposit. The Bureau should not be bound to deliver goods at any specified time.

Estimates of outputs should be low enough to make them reliable.

Offices and parties receiving materials should be responsible for all materials furnished.

The School of Household Industries should be closed, and the traveling industrial force of the Bureau of Education be increased for the purpose of establishing centers directly in towns.

#### AGRICULTURE AND GARDENING.

Agricultural clubs should be organized for boys and girls in localities where agricultural schools are located. In case these clubs are widely extended in the different provinces, special supervisors should be appointed.

Girls can participate in these clubs by preserving and canning fruit, raising poultry, and caring for flower gardens.

The active participation of farmers can best be secured by

developing the country fair idea. Garden days are worth while because of the interest they stimulate in agriculture.

The most desirable home projects for farm schools are the raising of chickens and live stock.

Fruit tree growing can best be encouraged by the proper supervision of plants given out from school nurseries.

All school-ground improvements should be by pupils, if possible. Home-ground improvement should be encouraged rather than required.

A part of the intermediate-school garden should be set aside for the cultivation of industrial plants, and for experimenting with new plants as a regular part of industrial work.

#### PLAIN SEWING.

In the first grade practical work, as well as exercises, should be included. In the third grade the pupils should make children's clothes, and in the fourth grade each girl should make garments to fit herself. All primary schools having third and fourth grades should be provided with sewing machines. The Bureau should furnish uniform perforated patterns for garments to be made in schools. A practical course in dressmaking should be introduced in the intermediate grades.

#### COOKING.

The teaching of cooking is impracticable in Grade III. More attention should be paid to the carrying out of the prescribed course in cooking for Grade IV.

The course in cooking should emphasize cleanliness, neatness, economy, and the use in the homes of those recipes which are found to be most practicable.

For the purpose of directly affecting the homes, girls should be required to cook in their homes and bring to the classroom dishes thus prepared. They should prepare dinners at the domestic-science building, and invite their parents. In cooking contests, prizes should be given to the pupils showing the best results with dishes made after recipes learned in school and prepared at home.

#### EMBROIDERY, LACE AND CROCHET.

The English system of measurement should be used in connection with exportation to the United States; but the metric system should always be noted.

Greater care should be exercised in divisions in carrying out

instructions of the technical bulletin relative to the making and the putting up of commercial embroidery, lace, and crochet. In their visits to all central, primary, and intermediate schools, supervising teachers and division industrial supervisors should inspect the files of technical bulletins, and they should find out whether or not the teachers read them.

Lace and embroidery workers should be so seated that their feet rest naturally on the floor. The desks should be neither too high nor too low. Special equipment is required for the most efficient work.

#### BASKETRY, HATS, AND SLIPPERS.

In the larger intermediate schools, part of the pupils should be permitted to do experimental work with designs and materials, provided that it can be done under the direction of a capable teacher and that all results of such work be passed upon by the General Office before being adopted by the school.

Too many designs are being used. Fewer designs and better workmanship should be required. The elimination of designs should be based upon a thorough knowledge of market conditions. The number of designs for industrial articles should be reduced to a minimum.

No attempt should be made to compete with Japanese products. Only articles of entirely different design, and of such quality that they will stand in a class by themselves, should be made.

The prices of industrial articles should not be lowered. If satisfactory prices cannot be secured for certain articles the production of them should be stopped.

#### DIVISION NORMAL INSTITUTES.

In divisions where industrial instruction is well advanced, one half of the time of a division normal institute should be devoted to academic instruction, and the remaining half to industrial and athletic activities.

Designs should be approved for divisions for only such articles as are marketable or have instructive value.

#### PHILIPPINE CRAFTSMAN.

During the past year The Philippine Craftsman has been greatly improved in making it a paper which can be read to advantage by Filipino teachers. Its popularity might be further increased by the addition of a personal or a service column, and

a column for provincial items, consisting of short, interesting notes, preferably submitted by division industrial supervisors.

The subjects recently sent to the field for comment are good, but, in addition, topics dealing with the preparation of materials should be included. The "central thought idea" is good and should be followed.

#### TRADE SCHOOLS AND MUNICIPAL SHOPS.

The building course was recommended, though difficulty was anticipated in the securing of work for those who take it.

Wherever a market for the product can be found, a course in ironwork should be included in trade schools.

At the present time the output of trade schools is largely dependent upon coöperation between the officers of the trade school, the provincial treasurer, the district engineer, and the division superintendent.

In larger trade schools having a sufficient output of work, teachers should be placed on an accrued leave basis, but in smaller schools not operating during the vacation, the vacation system is better.

The object of municipal shopwork should be to turn out boys who have a basic knowledge of the elementary principles of good work.

The best results can be obtained by adhering closely to the outline of the course of study, and consequently the municipal shop should be maintained as a first-class shop and not as a second-class trade school.

The manufacture of bamboo and rattan furniture should be encouraged in all provinces where materials are obtainable at moderate cost.

#### MISCELLANEOUS.

A graded industrial conversational English course is advisable in connection with the regular industrial period.

The industries of the Philippines are not so complex, and competition is not so great as to require vocational guidance in the sense in which that expression is generally understood.

Some kind of suitable industrial work may be provided for every pupil, however young or small, and a teacher who has only a moderate amount of initiative will find a way of adapting to his pupils the work provided for in the course of study.

Gardening should be the industrial work required in barrio schools wherever practicable. During the time when gardening cannot be carried on to advantage, as when the weather

is too wet or too dry or when a suitable site cannot be obtained for a garden, handicrafts should be taught.

The system of grading industrial work for the year should be based on monthly or bimonthly grades just as in the case of academic work, the rating to be checked and verified by the principal, the supervising teacher, or the industrial supervisor. A general average of 75 per cent, based upon the monthly or bimonthly rating as provided herein, should be required for promotion in the case of each industrial subject in the several grades.

#### REPORT OF THE COMMITTEE ON INDUSTRIAL INSTRUCTION.

At the 1916 division superintendents' convention at Baguio, the committee on industrial instruction made a report, which, with the exceptions indicated, was accepted. A résumé of the report follows:

##### TRADE SCHOOLS.

Whenever possible pupils should be required to complete the primary woodworking course before taking the trade course.

The building course should be extended to several of the trade schools, since the construction of wooden buildings is on the increase. This will necessitate builders.

##### DOMESTIC SCIENCE.

Cooking should be given in Grade IV where teachers, equipment, and funds are available. The present cooking course in intermediate schools is satisfactory.

The giving of plain sewing in barrios where there is a male teacher only will be dependent upon circumstances. In some cases excellent work has been done under these conditions.

The expense of seventh-grade sewing for the average girl can be reduced by permitting the girl to make articles which are salable or which are of use to her own family.

##### FARMING AND GARDENING.

The extension of agricultural work, where local conditions warrant, is favored.

The all-year-round gardens have worked out successfully. The present policy is approved in so far as it can be carried out.

The type of settlement farm school can be successfully adapted to certain isolated Christian communities, provided funds from Insular or provincial sources are available. An initial expense of approximately ₱800 would be required in each case.

The regular farm school is best adapted to the needs of the

average community. Vacation should not be given in these schools.

Arbor Day should be extended by general proclamation and special stress should be laid on the care of trees, when once they are planted.

#### THE BUSINESS SIDE OF THE INDUSTRIAL SYSTEM.

With reference to Act No. 2629, the convention did not agree with the opinion that little difficulty would be encountered in obtaining appropriations from provincial boards for division industrial departments.

The General Office should formulate the necessary regulations for the administration of the new industrial departments.

The provincial industrial departments will aid very materially in the development of household industries.

Division industrial supervisors and certain industrial teachers should be placed on the accrued leave basis to assist in the operations of Act No. 2629.

It is not believed practicable to extend the present industrial accounting system to household products.

No data are available to determine the proper wage for pupils and household workers. Home industries should be made remunerative enough to be attractive.

The control of production and merchandising of articles by the General Office was favored. The acceptance of orders should be left with the division office.

Further commercialization of the present industrial courses was opposed.

#### GENERAL.

The industrial work for the boys should be made continuous through the fourth, fifth, and sixth grades—that is, boys taking woodwork in grade four should continue the same line of work in the fifth and sixth grades.

The continuance of farm and trade schools during the long vacation for the purpose of offering to students who fail a second opportunity to pass official examinations was not favored. Where trade or farm schools normally continue in session during the vacation, pupils should be allowed to attend and to take a second examination.

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A bill was recently introduced in the legislature of Massachusetts increasing from \$4,000 to \$8,000 the state appropriation to enable the state board of agriculture to stimulate agricultural interest and activity among children and youths.

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## INDUSTRIAL NOTES.

### ANTIQUE.

Mr. Severo Encarnacion, formerly of Bugason district, has been made industrial supervisor, succeeding Mr. S. J. Rowland who is now in charge of the industrial museum at the General Office.

Mr. Florentino Armonio, a former Los Baños student, is in charge of gardens at the provincial school. Repairs to the fences were made during July. By having pupils work a larger plot in common, much land formerly wasted is now cultivated. Beans, cadios, peanuts, squashes, and cucumbers are well up. The garden shows care, and it will probably be a success.

Miss Ana Cabrillos has supervision of industrial work for girls. She reports that sales of embroidered articles amounted to nearly ₱300 in 1915-16. This year she expects better-finished articles. The provincial-school girls have turned in tray cloths valued at ₱31.20. Two orders valued at ₱115.20 are being completed in other schools.

All central schools are busy on commercial work. The girls at Culasi are doing well with embroidery. Miss Tating is their teacher.

At the provincial school the American stove used by the cooking classes last year, was worn out and had to be discarded. So this year when the girls saw an opportunity to buy a good stove at a reduced price, they decided that they would have it. There were no provincial funds available, but this did not stop them. After receiving the approval of the division superintendent, they apportioned the cost of the stove among the 113 girls taking cooking,

and without aid from the teachers, collected the entire amount in two days. As a result of this coöperation, each girl feels that the stove is her own to care for. It is kept clean with more zeal than the old one, the purchase of which called for no sacrifice on the part of the girls.

Boys enrolled in the provincial-school shop during the long vacation made 110 primary and intermediate school desks, 2 school-library book-cases, 5 teacher's tables, and numerous dry-measure boxes for Chinese merchants. Mr. F. R. Santos was in charge.

The provincial school has been surrounded by a new woven-wire fence; all trees on the grounds are well pruned; the school buildings have been cleaned inside and out; outbuildings have been repaired, and lawns have been kept trimmed since school opened in June. (G. W. S.)

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### BATAAN.

Two embroidery centers were recently organized in the division, one in the town of Balanga and another at Orani. The workers at these centers are graduates of the School of Household Industries recently returned from Manila. There are 15 workers at Balanga and 14 at Orani under the supervision of Miss Vicenta Sapalicio of the General Office. The center at Orani is for the present located in the domestic-science room of the Bataan High School, and the center at Balanga is temporarily located at the residence of the division superintendent. At Orani there are two other embroidery centers financed and managed by private firms.

Of interest in connection with the industrial work in the division is the introduction of cooking in the central schools at Dinalupihan, Hermosa, Samal, and Abucay. Cooking was not taught at these schools last year because of conditions which made its exclusion from the course necessary. It is expected that the central schools at Pilar and Orion will also teach cooking in the near future. In spite of the fact that the municipalities where these schools are located are too poor to give financial aid for a course in cooking, the teachers have succeeded in starting the work through their own efforts. Miss Apolonia Magpoc, cooking teacher at Samal, is leading other teachers in her efforts to carry on the work. There were practically no kitchen utensils that could be used in her school, so the fourth-grade girls brought stoves, pots, ladles, carahays, pans, and jars from their homes. The girls and the teachers contribute to the purchase of the materials used in cooking. (H. P.)

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#### BATANGAS.

Miss Teodora Bellen, one of the traveling industrial teachers of the Bureau of Education, has been organizing the work in real filet lace in Bauan. Although the work is entirely new in this province, her pupils have already satisfactorily completed one order for the Bureau, and are making rapid progress on two larger orders.

In several barrios fourth-grade classes have been started after the people of the barrios contributed sufficient sums to equip domestic-science houses suitable for carrying on girls' industrial work. The town of Batangas has six such schools.

A complete survey of all equipment on hand was made at the end of the last school year in all schools giving domestic science. The schools were then given lists of the equip-

ment required, and they were asked to forward requisitions for such articles as were lacking. As a result, all schools are now in the proper condition to get the best results from the work. For fourth-grade classes the cost of the equipment was ₱175, and for intermediate grades ₱290.

Several domestic-science houses are now under construction for central and intermediate schools. Each of them covers an area of 8 meters by 10 meters, and will cost about ₱500. There will be a good-sized kitchen, a combined sala and dining room, a small bedroom and bathroom; also an open porch. (G. T. S.)

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#### BOHOL.

The new domestic-science building in Tubigon will be the largest building of its kind in Bohol.

Wire fences are being erected in Jetafe, Inabanga, Ubay, and Mabini. In Inabanga the concrete posts are being made by the intermediate-school pupils.

Special emphasis will be given to poultry raising by the agricultural clubs in Tubigon, Calape, and Dimiao. A fine Cantonese cockerel has been presented to the schools of Tubigon and the industrial supervisor has a dozen Cantonese chicks which he expects to distribute to the schools in the near future.

The intermediate school in Dimiao is specializing in mosaic embroidery, and the girls are now at work on an order for six dozen napkins.

Several samples of ticug work have been forwarded to the General Office with the object of finding a foreign market for the ticug articles made in Ubay and Talibon. These towns offer a good field for the future development of existing household industries. The women at present make thousands of hats for which they receive only four to six centavos each. If they could be assured

of a steady market for ticug handkerchief boxes, candy boxes, circular mats, and ladies' hats, it would greatly improve the economic condition of the towns.

The native silver jewelry of Daus offers another promising field for more extensive development. There are as many women as men engaged in the work. The market is mostly provincial or interprovincial. A hundred-peso order is being filled by the pupils in the primary schools. (O. H. C.)

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#### BATANES.

Orders for about a hundred desks have been placed with the trade school at Basco. Thirty-eight of these are already finished. Sixteen seventh-grade boys working with simple shop tools are employed about eighty minutes a day during three days a week. They are divided into five groups, each of which is assigned to a particular division of work in making a desk. The first group planes the lumber, the second measures and marks it, the third saws it, the fourth cleans and rounds off edges and sides, and the fifth and last group sets the pieces together. By this division of labor, economy of time and money is emphasized.

The intermediate school has turned out baskets and equipment ordered for school purposes to the value of more than ₱110. (M. L.)

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#### BULACAN.

Hat making is being emphasized this year in all the schools of the Baliuag district. The most interest is shown in the class at Baliuag under the supervision of Mrs. Guevara. This class consists of 100 pupils from Grades III, IV, and V, and it is expected that they will turn out ₱1,000 worth of salable hats during the year. Hats made by

pupils are easily sold in the local market at from ₱3 to ₱10 each.

Baliuag has about 30 thriving panama hat palms planted in the school gardens. If this palm is found to be adapted to the climate and soil of Bulacan, it is expected that a larger quantity will be imported for this locality.

Permanent fences are under construction by the garden and school-ground improvement classes at Calumpit, San Ildefonso, Paombong, and Obando.

Sappan is being used for dyeing materials in basketry classes. The basketry classes of Malolos and Meycauayan districts receive their nito from Angat and their sappan from Santa Maria. Angat and Norzagaray are making some good coiled nito baskets.

Embroidery orders amounting to ₱300 have been placed with the different intermediate schools. (R. L. B.)

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#### CAGAYAN.

At the garden-day exercises held at the Tuguegarao Central School in March, various dishes prepared from vegetables grown in the school gardens were served to the visitors. No vegetables were sold, as the main purpose of the occasion was to encourage their use in the homes.

Under the supervision of a hired carpenter, the shop pupils of Tuguegarao are putting up a ₱2,000 school building. The timber is first group; the roof is of nipa.

The trade school is filling a large order for desks for the Tuguegarao Primary School.

Miss Petrona Macadaeg, formerly a teacher of domestic science in the Aparri Intermediate School, was transferred to Tuguegarao on July 5, 1916, to take charge of the domestic-science department of the provincial school. (J. C. S.)

## CAMARINES.

Work in the provincial shop has been greatly hindered by the lack of a building. The old trade building was destroyed in the typhoon of last October, and the new one built from the insurance funds, has not yet been completed. The machinery was recently installed by Mr. Swift from the General Office, but the ceiling is still incomplete. The boys have been doing their woodworking in a large bamboo shed built during the normal institute.

The teacher of rattan furniture at Pamplona and his class of boys, have solved the difficulty involved in getting industrial materials. Their supply of rattan is on Mount Tigbi, 15 kilometers away. In the past they have made the trip there and back in one day. One Saturday this teacher and his class started out for the mountain, prepared to stay over night. They came back the next day with a good supply of rattan. The boys enjoyed the trip greatly, and no future difficulty is expected in getting this material.

Baao Central School has the distinction of being the first to complete an order for industrial articles placed since the opening of school. The order consisted of 18 towels with a filet drawnwork design.

Bamboo bolos for cutting the grass on school premises are in use at the Goa Intermediate School. These bolos prove very satisfactory for cutting grass and weeds, especially in schools that cannot afford any better implements.

Miss Florintina Labrador has been transferred from Libmanan to Daet as domestic-science teacher.

Mr. Ignacio Figuracion, a graduate of the Camarines High School, has charge of garden activities in the Daet Intermediate School.

Orders for 304 pieces of embroidery, valued at ₱361 and 490 baskets

valued at ₱312, have been received from the General Office.

The increase in cost of industrial materials is felt in all work. Since the typhoons of 1915 many abacá plantations have been abandoned, and in some localities the price of lupis for basketry has advanced greatly. Schools that used to have lupis at their door now have to go to great trouble to get it. Owners of abacá plants are often loath to sell the material at reasonable prices on account of the high price now paid for hemp.

The 33 boys enrolled in the gardening class at the high school have just completed 268 meters of bamboo fence, inclosing 4,480 square meters of land for a school garden. The Naga central school garden is now entirely fenced. The plots have been laid off in accordance with Bulletin No. 31. Peanuts, mustard, corn, and beans have been planted. In some instances parents of pupils who are too small to do much heavy work, help in the preparation of the plots for home gardens. Every school in the district of Mambulao has a school garden planted to tomatoes, gabi, and sweet potatoes.

*Improved foot loom in use.*—The Bureau of Education improved foot loom, in use at the Lagonoy Central School, has attracted the attention of many of the townspeople, and if the machine could be equipped at a low price, would undoubtedly take the place of many of the old-style looms in use in the district. It has been demonstrated that cloth can be made on the improved loom in one third the time required on the old-style loom. In experiments made at the school, it is interesting to note that for two years boys have been the best as well as the fastest weavers. Although almost every girl of twelve years is familiar with the working of the old-style loom, in weaving sinamay, girls do not seem to have

the strength necessary for the shuttle work on the improved loom. So it is customary for a boy to work the shuttle, while a girl looks after the threads and other details. (B. L.)

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#### CAPIZ.

The recent inspections of various schools show that heavy rains have interfered with the planting of garden vegetables. The rains are now somewhat lighter and not quite so frequent, and considerable gardening is being done. The early rice planting has enabled many pupils to get started to school early this year. The school work of the province looks very promising.

*Calivo Intermediate.*—A new fence of woven wire and concrete posts is being constructed around the Calivo intermediate school site. Mr. Francisco del Rosario, the gardening teacher with the assistance of the schoolboys is doing the work. The new domestic-science building is being pushed to completion. Classes are now held there, and it makes a very good school home for the girls. All the construction work is being done by the shop boys under the direction of Mr. Manuel D. Isberto, the shop teacher. Mr. Pelayo has charge of the basketry classes this year. The school-ground improvements class is putting the athletic field in good condition. Courts for tennis, basket ball, volley ball and indoor baseball, as well as the baseball diamond, are being laid out. Several trees were planted on the school site on arbor day.

*Banga.*—Material for the desk basket, design 1099, has been found near Banga, and a class in this work has been organized in the central school.

*Calivo.*—Practically all the colored embroidery has been discontinued because of the lack of suitable dyes. White embroidery has been substituted in the central school. Miss

Militar's pupils have completed the elementary embroidery samplers, and the class is now ready for commercial work. This class has the best record for the present year.

*New Washington.*—The New Washington Central School has the best domestic-science building for primary schools so far completed in the Aklan section. (H. W. B.)

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#### CAVITE.

The Province of Cavite, for the purposes of industrial instruction, has this year been divided into two sections, the coastal towns forming one division, and the interior towns the other. In the coastal towns where bamboo is available, export, bamboo-rattan basketry has been prescribed, while in the interior or upland towns where abacá is abundant, coiled lupis basketry has been prescribed. In this way more and better work can be accomplished by the pupils, as the materials they need for their work are found in the immediate locality.

Messrs. Pedro Catungcan and Fausto Bondoc, graduates of the Philippine Trade School, are in charge of Imus and Naic Intermediate School shops, respectively.

Arbor day was celebrated in this province on August 5. Besides improving the school grounds the pupils planted fruit trees near their homes.

*The Indang Farm School.*—On the 17th of August the Indang farm school boys harvested 15,725 ears of Indang corn from a hectare of land. According to several tests, the harvest made an average of 6,290 kilos on cob, or 5,661 kilos when air dried, per hectare.

The Indang corn is a hybrid of the Leyte white corn and the Mexican June corn. The first generation of the hybrid produced extremely different types of corn, from long slender ears to short stocky ears; but in either case the amount of corn to

the ear was much greater than that from an ear of native corn. Another fault found with the hybrid at the beginning was that it was too soft and therefore easily attacked by weevils.

By persistent seed selection the size of the ears has been made comparatively stable. The grains of the Indang corn of the fifth generation are much harder and less susceptible to attack by weevils, than were those of the first four generations.

The average ear of Indang corn is 24 centimeters long and 6 centimeters in diameter. There are 14 to 16 rows of kernels. (R. G. McL.)

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#### ILOCOS NORTE.

Since the beginning of the school year the division has accepted the following orders for industrial articles:

Valenciennes lace .....	₱2,810.80
Cluny lace.....	3,297 45
Embroidery .....	433.95
Crochet .....	55.10
Polangui baskets.....	1,632.75
Vetiver fans and baskets.....	1,450.60
Slippers .....	25.00
Total .....	9,705.65

Within the same period local sales of school industrial work have amounted to about ₱150. (H. S. M.)

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#### ILOCOS SUR.

The Santa Maria Farm School has a number of American sweet-potato cuttings growing. It is hoped to use this school as a distributing center for these potatoes.

The Lagangilang Industrial School has succeeded in getting violetas started successfully for the first time in Ilocos Sur. This school will serve as a distributing center for cuttings for hedges.

Mr. E. Ford Hickman continues as the industrial supervisor in Ilocos Sur this year. His assistants are Zoilo Soller, in charge of minor in-

dustries, and Miss Helen Florendo, who has charge of girls' industrial work.

Practically all the articles made in industrial classes last school year have been disposed of at satisfactory prices.

Industrial work as indicated below has been sold and shipped from the division since the opening of schools:

Lace .....	₱139.75
Embroidery .....	265.00
Baskets .....	{ waste ..... 1,485.00
	{ miscellaneous ..... 771.50
Total .....	2,611.25

The embroidery was turned out by the graduates of the school of household industries.

The following orders for industrial work have been accepted by this division:

Cluny and torchon lace, nearly.....	₱10,000.00
White embroidery.....	780.00
Basketry, nearly.....	5,000.00

Total, about ..... 15,780.00

The lace order includes some 36,500 yards made up chiefly of designs 5511-1a, 1b, 10a, 10b, 11a, and 11b. It is the largest order for lace that this province has ever accepted.

Santa Lucia is using sappan dye successfully in coiled maguey basketry. A very satisfactory shade of brown has been secured. (E. J. M.)

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#### ILOILO.

The first commercial order placed with the industrial center at San Joaquin has been finished.

The supervising teachers met in the office of the division superintendent, September 11 to 13, in order to receive instructions concerning the new industrial department.

A primary school in Leon and one in Buenavista, report the prescribed exercises in industrial work as already completed.

The teachers and pupils of the central schools in Dingle, Janiuay, and Pototan, deserve credit for the

energetic manner in which they have undertaken and completed difficult school-ground improvements.

The district engineer has arranged to fill the Iloilo central school site with dredgings from the river. When this work is completed, the central-school teachers will have an opportunity to do some real school-ground improvement work. Now four fifths of the school site is covered with water after every heavy rain. (E. J. W.)

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#### ISABELA.

At a cost of ₱600 a permanent woven-wire fence has been built around the Isabela High School. A well is being dug at an expenditure of ₱200. A domestic-science building that will cost approximately ₱1,000 will soon be finished. The students during some of their vacant periods are engaged in clearing bushes from the school lot.

The Ilagan Central School has a larger piece of land for garden work this year. The boys have repaired the fence, constructed a gate, and built rest and seed houses.

During the first two weeks of school the boys in Malalam, under the direction of their teacher, Miss Francisca Azurin, repaired their garden and school fences. They have since leveled the lawn, and planted their plots to peanuts. The fact that the peanuts at this school are much bigger and healthier than those in the central school garden in spite of its having been planted about two weeks earlier, is probably due to the fertilizer used. Each boy put on his plot about four petroleum cans of guano.

The Malalam schoolhouse is infested with hundreds of bats. These little animals give much annoyance to the school. They make it difficult to keep the place clean. Last year the teacher had to tear down the ceiling and drive them out with

sticks. This gave only temporary relief for on the day after the ceiling was replaced, bats were heard again in all parts of the attic. The teacher put some big cats into the attic but these proved to be useless. This year smudges are made inside the schoolhouse late every afternoon. This drives them away, but they come back again the following evening. It would be appreciated if someone would suggest through THE PHILIPPINE CRAFTSMAN an effective means of destroying these bats.

Great efforts are being made to extend the nursery work in certain schools and to establish it in others. A considerable quantity of fruit-tree seeds have been collected and are being distributed. The greater portion of this nursery work will be done in the intermediate schools, from which the young trees will be distributed. In order that this work may be properly carried on, all the intermediate schools will soon have ample grounds permanently fenced. The campaign will lay special emphasis on planting and caring for papaya trees. (W. K. P.)

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#### LAGUNA.

*Sales for 1915-16.*—During the year 1915-16, the total sales of products of industrial classes amounted to ₱2,239.58. Of this amount the intermediate schools contributed ₱1,386.88. About 12 per cent of the sales were made in the first quarter, 45 per cent in the second, and the balance in the third. Of the intermediate-school sales, those of the provincial intermediate school, ₱502.43, amounted to nearly twice those of its nearest rival, Pagsanjan; and ₱483.75 of this was placed in the pupils' fund. The sales of the Biñan school were the largest of those for the primary schools, reaching a total of ₱132.02 for the year, but Pagsanjan and Santa Cruz each placed more money in the pupils' fund.

*Calamba.*—The shop teacher has greatly improved the school furniture and especially the school desks. All old desks have been replaned and overhauled, and are now in good condition.

The pupils with their teacher went to Makiling recently, and collected an abundant supply of industrial material.

Pupils in the central school are given a grade each month on the condition in which they keep their teeth.

*Lilio.*—As the rooms were not large enough to accommodate all pupils during the industrial periods, the coir-mat class built a shed in which to work. In this way the academic classes in the main building are not interfered with, and a greater degree of neatness can be maintained in the rooms.

In order that the garden boys could also have a place during rainy days, a resthouse and a seed house were constructed.

As the school premises here are new and need attention, the program for industrial work has been so arranged that once a week the boys in each class from Grade II to VII can devote their industrial period to school-ground improvement.

The seventh-grade shop pupils have been rushing work on desks for the primary school, and more than 20 have already been completed.

The high price of sodium is likely to force such industrial classes as require this material, to take up some other line of basketry.

*Santa Rosa.*—Unusual interest is being displayed in plain sewing and cooking. This is perhaps due to the fact that as soon as the girls finish articles, they are allowed to take them home to show their parents. The result is that relatives and friends now purchase many of these, but more especially the children's garments. This school disposed of fourteen articles between the last week of July and the 15th of August,

obtaining therefrom ₱9.10. Of this sum, ₱2.55 went to the pupils' fund, and ₱1.28 to the pupils. A net profit of ₱3.64 from the sale of products of the cooking class was recorded during the same period.

*Magdalena.*—A domestic-science building, costing about ₱2,500 is about to be completed. A new concrete closet of the latest design, and costing ₱1,300 has already been finished.

Miss Elena Francia, a graduate of the domestic-science course of the Philippine Normal School is now in charge of the girls' industrial work in the intermediate school.

At a box social held on August 12th, for the purpose of securing money for the library, the net receipts were ₱140.35. The boxes were prepared by the intermediate girls and a few primary girls under the direction of Miss Francia. The highest bid was ₱21. A dance followed the disposal of the boxes.

*Nagcarlan.*—The woodworking class has been constructing a bamboo partition in the new shop and grades are given on the quality of this work.

Money from the pupils' funds, to the extent of ₱19.29 has been used for the purchase of basketry and cooking materials. The materials for plain sewing are furnished by the pupils.

A net profit of ₱10.91 has been made by the cooking class. About three fifths of the profit went to the pupils and the balance to the pupils' fund.

#### LEYTE.

The pupils of the Tanauan Central School are working with much enthusiasm in clearing and leveling the site about the new ten-room building which was occupied at the opening of school. In a short time this school will have grounds comparing favorably with any in the province. Mr. Martin Hidalgo is in charge of the improvement work.

Practically all the intermediate

girls of Leyte assigned to classes in lace making, are working on orders for valenciennes lace. In order to systematize the work and bring the output up to the requirement, a standard of not less than one yard a week for each pupil engaged, is placed on all workers in lace of this type. The pupils are speeding up and are actually surprising themselves at the amount they accomplish. (S. O. D.)

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## MINDORO.

The value of the total output of the woodworking classes in the provincial-school shop for July was ₱62.50.

The division circular prescribing the kinds of fruit trees in which the different schools of this province will specialize has just been issued to the field.

There are eighteen industrial courses being given in the schools of Mindoro.

When sewing was first suggested as a subject to be taught by men, it was not taken very seriously but nowadays this attitude has ceased. There are male teachers in Mindoro who are not only teaching sewing, but lace making as well, in the four primary grades.

A new industrial material called "linsungan" has been sent from this division to the Bureau of Science for identification. It is a material very much like calotcagot in appearance.

An order for hemstitching men's handkerchiefs at 15 centavos apiece was recently accepted as Saturday work by eight girls of the provincial school. An accurate record of the time, disclosed the fact that it took the average girl 3 hours and 20 minutes to hemstitch one handkerchief while it took the fastest worker, a fifth-grade girl, only 2 hours and 20 minutes. (F. S.)

## OCCIDENTAL NEGROS.

Twenty-five boys in the Cadiz intermediate school shop made 100 school desks in five days, the lumber having been furnished machine-planed, from the Negros Lumber Company's mill. The output at Cadiz is so much greater than at other places in the province, as to show conclusively the commercial advantage of shops located in proximity to mills, over those located where the lumber supply must be obtained on requisition from some distant point.

The domestic-science teachers in Occidental Negros intermediate schools are: At San Carlos, Miss Dorotea Nimenzo; Escalante, Miss Aguida Figalan; Cadiz, Miss Marcela Abeto; Silay, Miss Feliza Velasco; Bacolod, Miss Pura Cuadra; provincial school, Mrs. Dollie M. Robb, Miss Eugenia Ebro (embroidery and crochet), Miss Paz Ereño (cooking and housekeeping); Bago, Mrs. Asuncion A. Concha; Valladolid, Mrs. Aurora Cuachon; La Carlota, Mrs. Maria E. Yulo; Hinigaran, Mrs. Cecilia S. Gentilezo; Isabela, Miss Rosario Locsin; Kabankalan, Miss Teresa Garin.

The supervising teacher of the Bacolod district Charles A. Blue, has started a campaign for equipment. The aim is to have as large a number of schools as possible fully supplied in every department by March 31, 1917. Equipment has been standardized for the division in a recent circular.

Twenty-four baby bonnets, designs 15-128, were fabricated in the provincial school in an average of a trifle over 31 hours. Materials were furnished with the order. Thread cost six centavos per bonnet. Four centavos was charged to the division office for postage; ₱1.15 remained for the work. If 15 centavos of this went to the pupils' fund and ₱1.00 to the worker, the worker averaged

something more than 3 centavos per hour for her time—a satisfactory compensation for school work.

Form 100 has been found very convenient for keeping records of the receipt and distribution of orders handled under the new sales system. (W. J. R.)

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#### PALAWAN.

All of the schools held arbor-day exercises of some kind in addition to tree planting. These generally consisted of literary programs, academic or athletic contests. The people attended well, and those present took a great deal of interest. Municipal officials generally were present.

In Cuyo, the celebration was combined with the town fiesta. Hedges were planted around the Cuyo Central School and the provincial school. About one hundred coconuts were planted on the provincial grounds, making about three hundred now growing. Suckers from the traveler's palm were planted in all of the barrios of Cuyo where the title to the land is clearly in the municipality. Eighty per cent of the plants set out last year on arbor day were reported as living at the close of school, and satisfactory plans were made for the care of the young trees through the long vacation.

Around the pupils' homes, fruit trees and coconuts were planted in large numbers. Many of the latter were also set out on the provincial grounds. Of the trees planted, over three fourths are living. Figures now available show that 1,200 trees were added to those of previous years. It is planned to replace every tree that dies.

Work similar to that of clean-up

week was also made a part of the programs here. Lawns were put in order, fences repaired, and surroundings cleaned.

The division industrial supervisor reports that in the Coron district industrial work is starting in a satisfactory manner. The girls are doing very well with embroidery orders. Gardening is not so successful, as Coron lacks good soil.

A recent order from the sales department of the General Office took all the fabricated articles left from last year.

The provincial school shop is working over-time on school furniture. (R. C.)

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#### THE MAILAG AGRICULTURAL SCHOOL.

The Mailag Agricultural School opened in the year 1910. It was then known as Mailag Industrial School; but shortly after its organization it was given its present title. In March, 1912, a complete reorganization was effected.

The farm, including the school grounds, occupies 25 hectares. Over half of it is cultivated for field crops, garden vegetables, and fruit plants. Besides these crops, the school is beginning to raise cattle, hogs, and chickens. It is desired to make the school self-supporting, as it is still largely dependent upon Government aid. For this purpose, each student is required to do a certain amount of work to pay his board and other expenses. The students are well provided for and are very comfortably situated.

Five members of the 1915-16 graduating class have already secured employment as industrial teachers. (M. L. C.)

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## LETTER BOX.

[From time to time there are received questions of general interest which require relatively short answers. Whenever the questions are of wide enough application to warrant it, the answers will be published under this heading.]

1. How can filet lace medallions be washed in the frames?

*Answer.*—Use Ivory soap. Make a lather and rub by hand. Rinse well with clean water, and dry in the bright sunshine.

2. Has poultry raising ever been tried in connection with girls' work in central primary schools?

*Answer.*—No; but the rules of the boys' and girls' agricultural clubs provide for the girls as well as the boys taking up this work wherever conditions seem particularly favorable. For further information see pamphlet on the organization of agricultural clubs for Filipino boys and girls.

3. Why should garden paths be straight and plots carefully aligned?

*Answer.*—Straight paths running from one side of the garden to the other and the careful alignment of plots are important factors in gardening, and are directly related to order. The teacher who is careless in this matter misses a valuable opportunity to serve the best interests of his pupils.

4. Is it important that paths and margins of gardens be kept free from grass and weeds?

*Answer.*—It is almost as important that garden paths and margins next to the fence be kept clear of grass and weeds as that the plots themselves should be kept weeded.

5. Should pupils use laundry soap for washing their hands?

*Answer.*—Laundry soap is unfit for washing the hands because of the free alkali present, unless the hands are very much soiled from such work as that in machine shops. Then it is more effective in removing the oil, tar and dirt than a mild soap. Ivory soap will not roughen a delicate skin as laundry soap would. For such work as scrubbing or washing seats, laundry soap should be used.

### ERRATUM.

In answer No. 2, on page 156 of the August issue of this magazine, the formula for a solution to kill weevils should have read: "Five ounces of chloride of mercury to one and one half liters of alcohol."

It has been suggested that this treatment is too expensive. At the Manila Trade School, when bamboo was being prepared for shipment to the San Francisco exposition, weevils were eliminated by giving all of the bamboo two coats of turpentine.

## BUREAU OF EDUCATION PUBLICATIONS.

(Abbreviated list.)

### ANNUAL REPORTS:

First to Sixteenth Annual Reports of the Director of Education. 1901-16. (Supply exhausted except for 1911, 1913, 1915, and 1916 editions.)

### BULLETINS:

1 to 8 and 10 to 30, inclusive. Various subjects relating to the early activities of the Bureau. Editions for the most part exhausted and material obsolete.

9. A List of Philippine Baptismal Names. 1905. (Revised, 1915.)

11. School and Home Gardening. 1910. (Revised, 1915.)

32. Courses in Mechanical and Free-hand Drawing. 1910. (Edition exhausted.)

33. Philippine Hats. 1910. (Edition exhausted.)

34. Lace Making and Embroidery. 1911. (Edition exhausted.)

35. Housekeeping and Household Arts—A Manual for work with the Girls in the Elementary Schools of the Philippine Islands. 1911. (Edition exhausted.)

36. Philippine Normal School—Catalogue and Announcement. 1911. (Edition exhausted.)

37. School Buildings and Grounds. 1912. (Supply limited.)

38. School Buildings—Plans, Specifications, and Bills of Material. 1912. (Supply exhausted.)

39. A Manual of Free-hand Drawing for Philippine Primary Schools. (See Textbooks. Free-hand Drawing for Primary Grades. Vol. I, Grades I & II; and Vol. II, Grades III & IV.) (Supply limited.)

40. Athletic Handbook for the Philippine Public Schools. 1911. (Revised, 1913.) (Edition exhausted.)

41. Service Manual of the Bureau of Education. 1911. (In course of revision.)

42. Intermediate English, II—Notes, Directions, and Aids to the Preparation of the Correspondence Study Course. 1911.

43. Philippine School of Arts and Trades—Catalogue. 1912. (Edition exhausted.)

44. Libraries of Philippine Public Schools. 1912. (In course of revision.)

45. The School of Household Industries. 1912. (Supply exhausted.)

46. The Industrial Museum, Library, and Exhibits of the Bureau of Education. 1913.

47. Good Manners and Right Conduct. 1913. (Revised, 1915.)

48. A course in Civics. (In course of preparation.)

49. Industrial Fiber Plants of the Philippines. 1913.

50. Arbor Day and School Holidays. 1915.

51. Philippine School of Commerce. 1913. (Supply limited.)

52. Philippine School of Arts and Trades—Nautical Department. 1913. (Edition exhausted.)

53. Elementary Course in Plain Sewing. 1913. (In course of revision.)

54. A Handbook of Industrial Plants in Common Use. 1915.

### CIVIC-EDUCATIONAL LECTURES:

The Rights and Duties of Citizens of the Philippines; The Prevention of Diseases; Rice; Diseases of Animals; Coconut Beetles; The Housing of the Public Schools; Coconuts; Corn. (Supply exhausted.)

### THE TEACHERS' ASSEMBLY HERALD:

Volumes I-V. 1908-1912. (Supply exhausted.)  
Volume VI. 1913. (Supply exhausted.)

### THE PHILIPPINE CRAFTSMAN:

Volumes I to IV. 1912-16. (Supply limited.)

Volume V. 1916-17. (Now current.)

### TEXTBOOKS:

Woodworking—A Manual of Elementary Carpentry for Philippine Public Schools. 1908. (Edition exhausted.)

Selected Short Poems by Representative American Authors. 1911. (Reprinted, 1913, 1915.)

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